IBM

Administering IBM® Lotus® Domino™ 6: Managing Servers and Users
Student Guide

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Student Guide

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Course Description

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Course Description

Target audience

The target audience for *Administering IBM® Lotus® Domino™ 6: Managing Servers and Users* is administrators new to Lotus Domino who are responsible for maintaining an existing Domino 6 server and user Infrastructure.

Summary description

This course introduces students to standard server maintenance and troubleshooting tasks. Students will also maintain IBM® Lotus Notes® and non-Notes users.

Course format and duration

This course is a two-day lecture/lab instructor-led course.

Course prerequisites

The recommended path for this course is that it follows both the *Administering IBM® Lotus® Domino™ 6: Operating Fundamentals* and *Administering IBM® Lotus® Domino™ 6: Building the Infrastructure* courses so that students will understand and have experience with installing and configuring Domino servers and Notes clients. However, students may take this course immediately following the *Administering IBM Lotus Domino 6: Operating Fundamentals* course.

Course goals

After completing this course, students should be able to:

- Maintain a Domino environment.
- Monitor Domino servers and Notes users.
- Troubleshoot common problems with Domino servers and Notes users.

Course Description...(continued)

Topics covered

Administering IBM Lotus Domino 6: Managing Servers and Users covers the following topics:

Managing users and groups

- Moving a user's mail file
- Changing a user's name
- Changing a user's location in the hierarchy
- Extending a Notes ID
- Deleting users
- Setting up roaming users
- Changing a user's group membership
- Managing groups
- Renaming groups
- Deleting groups

Managing non-Notes and Notes clients

- Setting up browser clients
- Updating client software

Managing servers

- Using the Server console window
- Defining a backup process
- Enabling Transaction logging
- Analyzing activity data
- Automating server tasks

Updating servers

- Searching for server references in a domain
- Setting up authentication with other Domino organizations
- Changing server access
- Decommissioning a server
- Recertifying a server ID
- Changing administrator access

Course Description... *(continued)*

Topics covered...

Setting up server monitoring

- Identifying mechanisms for collecting server information
- Starting the Statistic Collector task
- Creating event generators
- Creating event handlers
- Enabling agent logging

Monitoring server performance

- Viewing real time statistics
- Viewing statistics with Server Monitor
- Using the Domino Web Administrator
- Using the Domino Console

Resolving server problems

- Solving authentication and authorization issues
- Using event triggers to troubleshoot problems
- Troubleshooting replication problems
- Troubleshooting connection problems
- Solving agent manager issues
- Recovering from a server crash

Resolving user problems

- Troubleshooting workstation problems
- Troubleshooting database issues
- Troubleshooting connection problems
- Tracking user mail messages

Course Description...(continued)

Recommended agenda for Day 1

The following table shows the recommended agenda for Day 1.

Time	Lessons or Topics
15 minutes	Introduction
1 hour, 15 minutes	Lesson 1: Managing Users and Groups
15 minutes	Break
45 minutes	Lesson 1: Managing Users and Groups (continued)
1 hour	Lesson 2: Managing Notes and Non-Notes Clients
1 hour	Lunch
1 hour, 15 minutes	Lesson 3: Managing Servers
30 minutes	Lesson 4: Updating Servers
15 minutes	Break
1 hour, 15 minutes	Lesson 4: Updating Servers (continued)

Recommended agenda for Day 2

The following table shows the recommended agenda for Day 2.

Time	Lessons or Topics
1 hour, 30 minutes	Lesson 5: Setting Up Server Monitoring
15 minutes	Break
1 hour	Lesson 6: Monitoring Server Performance
1 hour	Lunch
2 hours	Lesson 7: Resolving Server Problems
15 minutes	Break
1 hour, 30 minutes	Lesson 8: Resolving User Problems

Lotus Professional Certification

Lotus Professional Certification

Lotus Education has a robust certification program in support of Lotus Notes and Domino technical competencies. For complete information on Lotus' professional certification program, visit the Lotus Education Web page at http://www.lotus.com/certification.

Place in certification

Delete this section and subsequent steps if there is no certification exam(s) connected with the course.

Administering IBM Lotus Domino 6: Managing Servers and Users is listed as one of the preparation resources for the following exam(s):

■ *622: Notes Domino 6: Managing Servers and Users*

This exam is part of the path for CLP IBM Lotus Domino 6 System Administrator certification. The complete path is described below.

Exam Number	Exam Name	Certification Earned
620	*Notes Domino 6 System Administration Operating Fundamentals*	CLS
621	*Notes Domino 6: Building the Infrastructure*	
622	*Notes Domino 6: Managing Servers and Users*	CLP (all 3 exams required)

Lotus Professional Certification... *(continued)*

Preparing for a Lotus certification exam

Attending this course and using this Student Guide will help you prepare for certification. Some topics covered on the exam are not covered in this course and some of the objectives covered in this course are not tested on the exam. Be sure to follow all the steps listed in order to prepare fully for the exam.

Step	Action
1	Review the exam competencies.
2	Get hands-on experience.
3	Use the Exam Preparation Chart.
4	Use all available resources.

Step 1: Review the exam competencies

At the time of course publication, the exam competencies were not available to include in this guide. You will find the competencies listed in the Exam Guides located on the IBM Software Services for Lotus Certification Web page at http://www.lotus.com/certification.

Step 2: Get hands-on experience

Actual hands-on experience is a critical component in preparing for the exam. The exam is looking to measure how well you perform tasks, not how well you memorize features and functions.

- Spend time using the product and applying the skills learned.
- Direct application of the skills learned in this class cannot be replaced by any other single resource listed here.

Lotus Professional Certification...(continued)

Step 3: Use the Exam Preparation Chart

The Exam Preparation Chart summarizes the learning resources available for each individual exam.

A subset of this chart appears in the **Preparing for the *622: Notes Domino 6: Managing Servers and Users* exam** section. The full chart is located on the IBM Software Services for Lotus Certification Web page at http://www.lotus.com/certification.

Step 4: Use all available resources

We recommend using a range of resources when preparing to take an exam. The following table describes the types of resources available to prepare for certification exams. For a listing of resources specific to each exam, use the Exam Preparation Chart.

Resource	Brief Description	Where to Find Resource
Exam guides	Complete version includes certification titles and paths, sample questions, and registration information.	Abbreviated version is available in the Exam Competencies Appendix included in this course. Complete version is available on the IBM Software Services for Lotus Certification Web page at http://www.lotus.com/certification.
Lotus authorized courses	Offered at Lotus Authorized Education Centers (LAECs) and Lotus Education locations worldwide.	A complete list of courses and LAECs are available on the IBM Software Services for Lotus Education Web page at http://www.lotus.com/education.
CBT programs	Used as an alternate learning tool and/or supplement to courses.	Additional information is available at The Education Store on the IBM Software Services for Lotus Education Web page at http://www.lotus.com/education.
Practice tests	Available from a variety of vendors. Visit the individual exam preparation page to determine what practice tests are available for a specific exam.	Available from IBM Software Services for Lotus Certification Web page at http://www.lotus.com/certification.

Lotus Professional Certification...(continued)

Step 4: Use all available resources...

Resource	Brief Description	Where to Find Resource
Online learning	May include additional items such as Learner-Directed Offerings from Lotus Education and/or authorized course in LearningSpace	Learner-Directed Offerings from IBM Software Services for Lotus are available at http://www.lotus.com/education. The Notes.net Web site at http://www-10.lotus.com/ldd/lbytes.nsf. See the complete Exam Preparation Chart for any additional online learning.
Yellowbooks	Official Lotus product documentation.	Additional information available at The Education Store on the IBM Software Services for Lotus Education Web page at http://www.lotus.com/education.
Redbooks	Technical cookbooks that address topics that the reference manuals may not cover.	Ordering information is available at http://www.lotus.com/redbook.

Preparing for the *Notes Domino 6: Managing Servers and Users* exam

The following materials are available for the *Notes Domino 6: Managing Servers and Users* exam:

- Experience
- Exam Guide
- *Administering IBM Lotus Domino 6: Managing Servers and Users (ND770)* course
- Lotus Domino 6 Help Files

For the most up-to-date resource listing for this exam, visit the IBM Software Services for Lotus Certification Web page at http://www.lotus.com/certification.

Learning Processes and Conventions

Icon Quick Reference

The following are brief descriptions of each of the learning process icons used in this course.

Assessment

Provides feedback to both the student and instructor and can be formal or informal. Assessments can be collected and graded or assessment answers are provided.

Case study

Exercises for discovery and exploration in advanced technical course that focus on problem solving. These have no "right" answer. The solution is a set of pros and cons and a recommended answer.

Exercises

Problem-solving learning processes in which students are given a set of criteria that they use to develop a working solution.

There are two types of exercises: online and paper-based. The following two items show the icons that would accompany each.

Online exercise

Students complete the exercise using the computer.

Paper-based exercise

Students complete the exercise using paper and pencil.

Icon Quick Reference...(continued)

Guided Practice

Student-centered learning process that allows students to learn by performing a task. Guided Practices can be instructor-led or self-paced.

Procedure

Generic step-by-step instructions that explain how to perform a task. These are always presented in a table format.

Review

Reiterates main concepts and can be used to gain feedback, assess learning, review critical material, or to transition from one unit to another.

Learning Conventions

Conventions are rules that govern how to display specific types of information.

The following are learning conventions that may be used within this courseware.

Caution

Cautions are short, descriptive paragraphs meant to warn of potential pitfalls or areas where students could experience problems during class or back on the job.

Note: Notes may appear in the Student Guide and can be used to note differences in content.

Tip: Tips provide additional guidance, or a hint, for students about a topic or task.
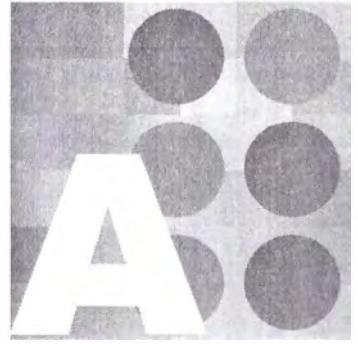
Maintaining Users

Lesson 1   Managing Users and Groups

Lesson 2   Managing Notes and Non-Notes Clients
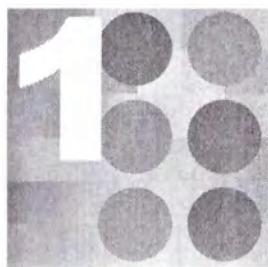
Managing Users and Groups

In a large company, employee information is constantly changing. People move to new positions, change their name, or leave the company. When an employee moves to a new position, one of the most common administration tasks required is updating group information. Administrators must keep user information up-to-date in order for the Domino environment to function efficiently.

Managing groups involves:

■ Creating new groups
■ Renaming or editing existing groups
■ Deleting groups
■ Changing an individual user's group membership

Since user and group information appear in many places in the Domino environment, use the **Administration Process** to distribute changes throughout the Domino environment.

Objectives

After completing this lesson, you should be able to:

✓ Register new Lotus Notes users.
✓ Move a user's mail database.
✓ Change a user's name.
✓ Recertify a user's ID.
✓ Change a user's location in the hierarchy.
✓ Delete a user.
✓ Create a roaming user.
✓ Manage user groups.
✓ Change a user's group membership.

Classroom Scenario

The following scenario will be used throughout the course to illustrate the business need behind the different administration tasks performed in this course.

Classroom Scenario

Worldwide Corporation is a manufacturer of pottery based on designs from around the world. Since beginning 10 years ago, it has grown to become one of the largest retail and wholesale distributors of pottery in the world.

The company has stores and offices around the world. In addition to selling products through their retail stores, Worldwide Corporation receives orders from its catalog and Web site.

Worldwide Corporation recently purchased and implemented IBM® Lotus Notes®/Domino™ 6 because it addresses their critical business needs for messaging and collaboration with a reliable infrastructure.

Classroom Configuration

The following figure illustrates the assigned server and administrator names for this class.

Doctor Notes/WWCorp

Hub/SVR/WWCorp

East01/SVR/WWCorp
Admin East01/East/WWCorp

East02/SVR/WWCorp
Admin East02/East/WWCorp

West01/SVR/WWCorp
Admin West01/West/WWCorp

West02/SVR/WWCorp
Admin West02/West/WWCorp

East03/SVR/WWCorp
Admin East03/East/WWCorp

East04/SVR/WWCorp
Admin East04/East/WWCorp

West03/SVR/WWCorp
Admin West03/West/WWCorp

West04/SVR/WWCorp
Admin West04/West/WWCorp

East05/SVR/WWCorp
Admin East05/East/WWCorp

East06/SVR/WWCorp
Admin East06/East/WWCorp

West05/SVR/WWCorp
Admin West05/West/WWCorp

West06/SVR/WWCorp
Admin West06/West/WWCorp

Adding Users

**Classroom
Scenario**

Last week, Worldwide Corporation hired a large group of employees. This provides a key opportunity for administrators to manage user information.

Add new hires to WWCorp's Directory

Follow these steps to register the new employees.

Step	Action
1	From **Domino Administrator**, select your assigned server.
2	From the **People & Groups** tab, choose **Tools→People→Register**.
3	If prompted, select your regional certifier ID (for example, **\Notes\Data\East.id or West.id**), and click **Open**.
4	Enter the certifier password, and click **OK**.
5	On the **Certifier Recovery Information Warning** dialog box, click **OK**.
6	Select **Advanced** to see more registration options.
7	On the **Basics** panel, complete the following fields: ■ **Registration Server:** your assigned server ■ **First name** and **Last name:** Make up names ■ **Password:** `lotusnotes` ■ **Password Options:** ■ **Password Quality Scale: Weak password, not very secure (4)** ■ Select **Set internet password**. ■ Click **OK**.

Adding Users...(continued)

Add new hires to WWCorp's Directory...

Step	Action
8	On the **Mail** panel, change the **Mail Server** to your assigned server.
9	If necessary, on the **Address** panel, complete the following fields: ■ **Internet Domain:** wwcorp.com. ■ **Internet address:** FirstInitialLastName@wwcorp.com
10	On the **ID Info** panel, complete the following fields: ■ **Certifier ID:** your regional certifier ID (either East.id or West.id) ■ **Location for storing user ID: In Domino directory**
11	Click ▒ to add the user to the Registration Queue.
12	Repeat Steps 7 and 11 to register at least five new users (the information added in Steps 8 through 10 become the defaults).
13	Click **Register All**.
14	Click **OK** to confirm the users were successfully registered, and then click **Done**.

Components of a Notes ID

Registering users and servers in a domain automatically creates corresponding Person documents, Server documents in the Domino Directory, and the associated ID files. A **Notes ID** identifies a user or server to Domino systems. A Notes ID contains:

Name and license information
Private key (encrypted with password)
Public key
Certificates (Domino and Internet, X.509)
Encryption key(s) (optional) (encrypted with password)
Recovery information (optional)

Facts About the Administration Process

The **Administration Process** is a program that automates administrative tasks such as:

- Rename a person or group.
- Delete a person or group.
- Recertify users.

How does the Administration Process work?

The following figure shows how requests are processed using the Administration Process.
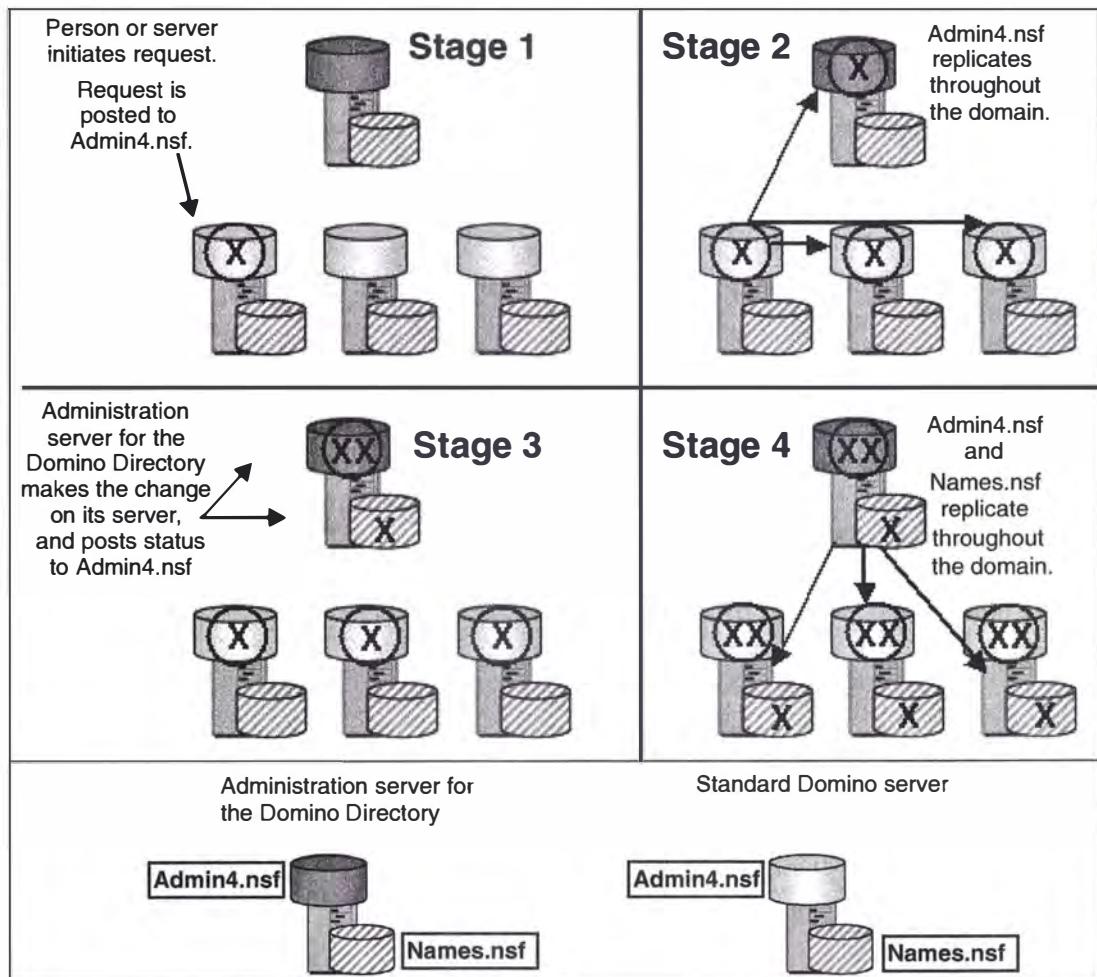
Note: Any server named as an administration server for a database completes changes to ACLs and fields, and then posts a status to its Administration Requests database.

Changing User Names

Each Domino user and server has a hierarchical name consisting of various components:

- Organization: Company or institution
- Organizational Unit(s): Department or regions
- Common name: Unique name, often the given and surname. The name used by the user.

Name change requirements

The Administration Process automates a name change by propagating the change throughout the Domino domain. The administrator initiating the name change requires at least the following access:

- Editor with Create documents access, or [UserModifier] role to the Domino Directory (Names.nsf)
- Author with Create documents access to the Certification log (Certlog.nsf)
- Author access to the Administration Requests database (Admin4.nsf)
- Access to the original certifier ID

Advantages of the Administration Process

The Administration Process method is preferable to editing the Person document because:

- The automated method updates groups and ACLs.
- Using the administrator tools creates a record in the Certification log.

Changing User Names...(continued)

A Worldwide Corporation staff member has legally changed their name. Personnel notifies User Support of the new name.

Classroom Scenario

Change a user's common name

Follow these steps to change the user's name.

Step	Action
1	From **Domino Administrator**, select the instructor's server.
2	Click the **People & Groups** tab→**Domino Directories** section→ **WWCorp's Directory** section→**People** view.
3	Select a user name **you** previously registered.
4	Choose **Tools→People→Rename**.
5	Click **Change Common Name**.
6	Select **Supply certifier ID and password**. Click **Certifier ID**, select the certifier ID file you used to certify the user's ID earlier, and click **Open**.
7	Click **OK** to continue.
8	Enter the password for the selected certifier, and click **OK**.
9	Accept the default certificate expiration date, and click **OK**.
10	Change the user's **Last name**, and then change the **Short name** and **Internet address** fields accordingly.
11	Click **OK** to submit the request to change the common name.
12	Click **OK** after viewing the number of entries processed.

Name change requests

Users can request a name change via e-mail. The name change is completed via mail actions by the administrator and the user. For more information, refer to the Lotus Notes 6 Help topic *Renaming a user's common or alternate name*.

Moving a User

Administrators may need user-specific files moved to other Domino servers when:

■ More space is required on a server.

■ Servers are reorganized: Added or consolidated.

■ Users change jobs or move to different parts of the organization.

Additional considerations when using shared mail

Shared mail permits using a central location for accessing mail messages sent to multiple users on the same server. If using shared mail, unlink the mail database from any shared mail databases. For more information on unlinking shared mail databases, refer to the Domino Administrator 6 Help database topic *Managing a shared mail database*.

Moving a User...(continued)

One of Worldwide Corporation's Sales employees is moving to another region.

**Classroom
Scenario**

Move the user's Mail database to another server

Follow these steps to move their mail database to a server in their new area.

Step	Action
1	From **Domino Administrator**, select the instructor's server.
2	Click the **People & Groups** tab→**Domino Directories** section→ **WWCorp's Directory** section→**People** view.
3	Select one of the users you registered earlier.
4	Choose **Tools→People→Move to Another Server**.
5	From the **Destination** drop-down box, select the other classroom server assigned by the instructor.
6	Enter the new mail database location, for example **\mail**, and click **OK**. **Result:** A request is created in the Administration Requests database.
7	Click **OK** when notified of success.

Administration Process actions

The Administration Process completes the mail database move and updates the appropriate documents. This action is dependent upon the Administration Process settings (located in the **Server** document→**Server tasks** tab→**Administration Process** tab) and replication schedule for the Domino servers.

Updating the user's Location document

Once the mail database is moved and the appropriate Person document is updated, the user's workstation information is changed to reflect the new database location the next time the user connects to the server.

Note: On rare occasions, it may be necessary to manually edit the Location document.

Extending the Expiration Date on a Notes ID

For security reasons, the certificate in the user ID is given an expiration date. When a certificate expires, a user can no longer use it to communicate with servers and clients. Notes prompts the user when the certificate is about to expire.

Server and certifier IDs can also expire. Although, typically the expiration date is set much longer than on user IDs.

Viewing certification expiration dates

A user can view a certificate expiration date in the User Security dialog box. From the Notes client, choose **File→Security→User Security**.

Administrators can view certification expiration dates for multiple users. From Domino Administrator; click **Configuration** tab→**Certificates** section→ **Certification Expiration** view.

Recertification requirements

Recertifying a Notes ID requires the following access levels:

- Domino Directory: Author with Create Documents access and the [UserModifier] role or Editor access
- Certification log: At least Author with Create Documents access

Extending the Expiration Date on a Notes ID...*(continued)*

Recertify an expiring ID

Follow these steps to extend the expiration date on a user's ID.

Step	Action
1	From **Domino Administrator**, click the **People & Groups** tab→ **Domino Directories** section→**WWCorp's Directory** section→**People** view.
2	Select a user who you registered earlier in this lesson, and then choose **Tools→People→Recertify**.
3	To specify a registration server, click **Server**, select **Hub/SVR/WWCorp**, and click **OK**.
4	Select **Supply certifier ID and password**.
5	Click **Certifier ID**, select your regional Organizational Unit certifier ID (either **East.id** or **West.id**) to recertify the user ID, and click **Open**.
6	Click **OK** to continue.
7	Enter lotusnotes for the certifier ID's password, and click **OK**.
8	In the **Renew Certificates In Selected Entries** dialog box, complete the following: ■ Enter a new date in the **New certificate expiration date** field. ■ Select **Inspect each entry before submitting request**. Click **OK**.
9	Review the entry, then click **OK** to view the next entry until all entries are processed.
10	Click **OK** when notified of the number of entries processed. **Result:** A request to recertify the user is posted to the Administration Requests database for each user processed.

Deleting Users

When users leave the company, delete user information from the Domino Directory to prevent access to corporate servers and files.

Classroom Scenario

An employee is transferring to a subsidiary outside the Worldwide Domino domain. Another employee will use the transferring employee's mail database for departmental information so there is a request to keep their mail functioning.

Delete a user

Follow these steps to delete the user and retain the mail database.

Step	Action
1	From the **Domino Administrator**, select the instructor's server.
2	Click the **People & Groups** tab→**Domino Directories** pane→ **WWCorp's Directory** section→**People** view.
3	Select a user name you registered earlier.
4	Choose **Tools**→**People**→**Delete**.
5	Select **Do not delete the mail database**.
6	Click **OK**. **Result:** The Administration Process deletes all references to the user, except the mail file.

Note: For information, refer to the Lotus Notes 6 Help topics *Deleting a user name with the Domino Administrator* and *Delegating access to your mail file*.

Securing the Domino environment

Deleting a user from the Domino Directory, groups, and ACLs may not prevent all access to the Domino environment. If a user has retained a copy of their ID, they could access a server.

To secure the Domino environment, add deleted user names to a group specifically denied access to all servers (for example, a group called **Deny Access**).

Changing User Locations in Organizational Hierarchy

Similar to changing a user's common name, administrators can change a user's location within the organizational hierarchy. This may be necessary when a user changes:

■ Job function

■ Geographical location

Certifier change requirements

The Administration Process automates recertification by propagating changes to a user's certification throughout the Domino domain. The administrator initiating the recertification requires at least:

■ Editor with Create Documents access or [UserModifier] role to the Domino Directory

■ Author with Create Documents access to the Certification log database (Certlog.nsf)

■ Author access to the Administration Requests database (Admin4.nsf)

■ Access to the original certifier ID (See *Requesting a new certifier* in this lesson)

■ Access to the new certifier ID to complete the change (See *Completing the move* in this lesson)

Changing User Locations in Organizational Hierarchy... *(continued)*

Checklist: Recertifying a user

Complete these tasks to recertify a user.

	Task	Procedure
❑	1	Request a new certifier.
❑	2	Complete the move.

Task 1: Request a new certifier

Follow these steps to reassign a user to another Organizational Unit certifier.

Step	Action
1	From the **Domino Administrator**, select the server to administer.
2	Click the **People & Groups** tab→**Domino Directories** section→ *Your* **Directory** section→**People** view.
3	Select the people to move to a new certifier.
4	Choose **Tools**→**People**→**Rename**.
5	In the **Honor old names for up to ___ days (Between 14 and 60 days)** field, enter a value. The default is 21 days.
6	Click **Request Move to New Certifier**.
7	Select **Supply certifier ID and password**. Click **Certifier ID**, select the original certifier ID file, and click **Open**.
8	Click **OK** to continue.
9	Enter the password for the selected certifier, and click **OK**.
10	Select the new certifier ID file from the **New Certifier** drop-down box, then click **OK**.
11	Click **OK** to submit the request to change the certifier.
12	Click **OK** after viewing the number of entries processed.

Changing User Locations in Organizational Hierarchy...(continued)

Task 2: Complete the move

Once the request is posted, the move to the new certifier is approved by the owner of the new certifier. Follow these steps to complete the move.

Step	Action
1	From **Domino Administrator**, click the **Server** tab→**Analysis** tab→**Administration Requests (6)** section→**Name Move Requests** view.
2	Select the users to be moved.
3	Click **Complete move for the selected entries**.
4	Select **Supply certifier ID and password**. Click **Certifier ID**, select the new certifier ID file, and click **Open**.
5	Click **OK** to continue.
6	Enter the certifier password, and click **OK**.
7	Accept or change the expiration date, and then click **OK**.
8	(Optional) Enter a **Qualifying Org. Unit**.
9	Click **OK** to submit the request to change the certifier.
10	Click **OK** after viewing the number of entries processed.

Change the Organizational Hierarchy Exercise

Classroom Scenario

Worldwide Corporation is assigning Sales and Marketing representatives based on their regional location. For example, staff in Great Britain will use the following naming convention:

common name/**Sales/GB/WWCorp**

Add an Organizational Unit (OU)

Complete the following tasks:

■ Create a unique OU certifier.

What steps did you use?

■ Move two of the users you registered earlier to the new OU.

What steps did you use?

What is a Roaming User?

A **Roaming user** is someone who is set up to have their personal up-to-date Notes information available to them on any PC.

How roaming works

When a roaming user logs on from a different Notes client, Domino automatically retrieves the user's ID file, Personal Address Book, bookmarks, and journal from the roaming user's mail server.
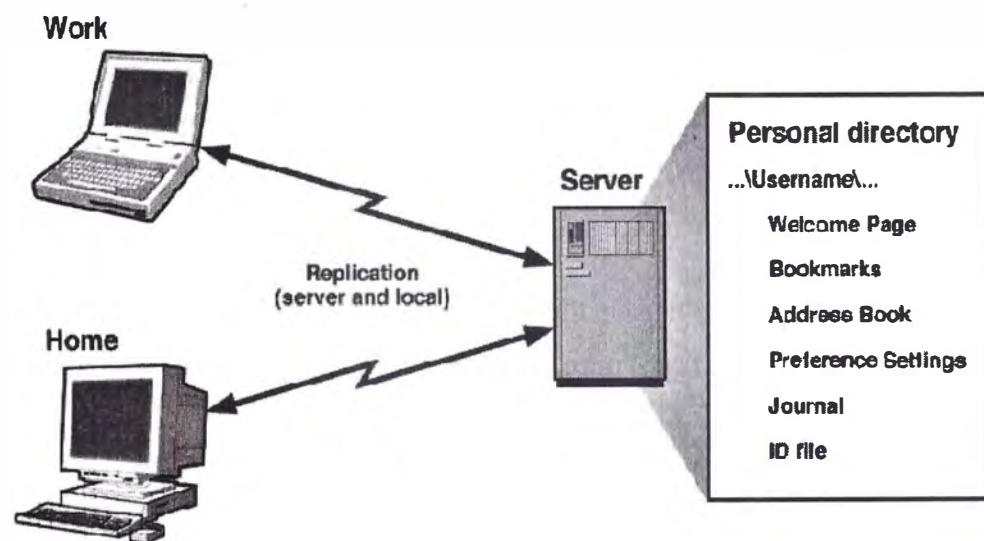
What is a Roaming User?... *(continued)*

Advantages of roaming

Advantages for administrators are:

- Easier upgrade and service of machines, due to information stored on the server
- Automatic remote clean-up of machines
- Centrally locate user information

Advantages for users include:

- Increased mobility
- Easier access to information
- Secure information

Considerations

When using the roaming user feature, consider the following:

- Disk space on the server
- Server performance

The recommendation is to dedicate a server on which to store roaming user files, especially for enterprise-wide deployments.

Creating Roaming Users

Create a roaming user during registration

Administrators can specify roaming users during initial registration, or can upgrade existing users. Follow these steps to create a roaming user during the registration process.

Step	Action
1	Click the **People & Groups** tab→**People** view.
2	Choose **Tools→People→Register**.
3	Enter the certifier password, and click **OK**.
4	On the **Certifier Recovery Information Warning** dialog box, click **OK**.
5	Enter the first and last name of the user.
6	Enter lotusnotes as the password. Click **Password Options**, set the password quality to **4** and click **OK**.
7	Click **Enable roaming for this person**.
8	Select **Advanced**.
9	Click **Roaming**.
10	Click **Roaming Server,** select **your server**, and click **OK**.
11	If necessary, in the **Personal roaming folder**, enter roaming\username.
12	Select **Create roaming files now**. **Result:** Roaming databases (Bookmarks.nsf, Journal.nsf and Names.nsf) are created. If **Create roaming files in background** is selected, the files are created the next time the Administration Process runs.
13	Click ✔ to add the user to the **Registration Queue**.
14	Click **Register**.
15	When the registration is complete, click **OK**.
16	Click **Done**. **Result:** New user appears in the **People** view. The Globe icon indicates the user is roaming.

Creating Roaming Users...*(continued)*

Convert an existing user to roaming *only client "*

Follow these steps to create a roaming user by converting an existing user.

Step	Action
1	Select a user you created earlier in the lesson.
2	Choose **Tools→People→Roaming**.
3	Click **Roaming Server,** select **your server**, and click **OK**.
4	Keep the remaining defaults. Click **OK**. **Result:** A message box displays indicating that an administration request has been issued to upgrade one user to roaming.
5	Click **OK**.
6	Click **Edit Person** to open the Person document of the converted user.
7	Click the **Roaming** tab. **Result:** If the User can roam field value is **In Progress**, this user is in the process of being upgraded to roaming.

Administration Process for roaming users

When a user is upgraded to roaming, the Administration Process changes the user's status in their Person document from non-roaming to roaming and creates a personal subdirectory for each roaming user through the following process:

- Client information is updated in the Person record.
- Roaming user's replica stubs are created on the server.
- Roaming user's information is updated in the Person record.
- Roaming user's replica stubs are monitored to ensure completion of replication.
- Roaming user's state is updated in the Person document.

(Optional) Using Alternate Naming

Lotus Notes and Domino support adding an alternate name to a user's ID file. The biggest benefit to using alternate names is for international companies to:

■ Identify organizations and organizational units in multiple languages.

■ Allow users to be identified in two languages.

Alternate names give a user the ability to use their native language and character set for display and name lookup purposes. For example, a Chinese person could be known in the U.S. by given-name-first, surname-last, as is U.S. custom. In China, the person would be known by surname-first, given-name-last, as is Chinese custom.

Note: A user ID may contain only one alternate name.

Checklist: Assigning alternate name

Complete these tasks to create and assign alternate names.

	Task	Procedure
❏	1	Add an alternate language to a certifier ID.
❏	2	Add an alternate name to a user: a. Register a new user with an alternate name. b. Recertify a user with an alternate name.

(Optional) Using Alternate Naming...(continued)

Task 1: Add an alternate language to a certifier ID

Before being able to add an alternate name to a user's ID file, the certifier ID must permit the use of an alternate language.

Follow these steps to add an alternate language to a certifier ID.

Step	Action
1	From **Domino Administrator**, click the **Configuration** tab.
2	Choose **Tools→Certification→Certify**.
3	Select the certifier ID, and click **Open**. Click **OK**.
4	Enter the password, and click **OK**.
5	Select the O or OU certifier ID to recertify, and click **Open**.
6	Enter the password, and click **OK**.
7	Click **Add**. Select a **Language**, and enter an **organization or organization unit**, and then click **OK**.
8	Click **Certify** to complete the registration.

Notes:

- An Organizational Unit certifier or a user is certified by its parent certifier.
- An Organization certifier acts as its own parent. Therefore, the organization certifier ID file is both the certifying ID and the ID to be certified.

(Optional) Using Alternate Naming...*(continued)*

Task 2a: Register a new user with an alternate name

Once you have set up the alternate language in a certifier, you may register users and specify their alternate name. Follow these steps to add an international user.

Step	Action
1	From **Domino Administrator**, click the **People & Groups** tab.
2	Choose **Tools→People→Register**.
3	If necessary, select the certifier ID, and then click **OK**.
4	Enter the certifier password, and click **OK**.
5	Add the required information to register a user.
6	Select **Advanced** to see more registration options.
7	On the **ID Info** panel, select the certifier ID file that contains an alternate language.
8	On the **Other** panel, complete the following fields: ■ **Alternate name language** ■ **Alternate name** ■ (Optional) **Alternate org unit**
9	Click .
10	Click **Register**.
11	When complete, click **O K** and then click **Done**.

(Optional) Using Alternate Naming...(continued)

Adding alternate names

If alternate languages are added after initial registration, edit Person documents and recertify users to add alternate name representations.

Task 2b: Recertify a user with an alternate name

Follow these steps to add an alternate name to an existing user during recertification.

Step	Action
1	From **Domino Administrator**, click the **Configuration** tab.
2	Choose **Tools→Certification→Certify**.
3	Select the certifier ID containing an alternate language, and click **Open**.
4	Enter the password, and click **OK**.
5	Select the user ID that needs an alternate name assigned, and click **Open**.
6	Enter the password, and click **OK**.
7	Click **Add**. Select a **Language**, and enter a **Common Name**, then click **OK**.
8	Click **Certify** to complete the registration.

(Optional) Using Corporate Hierarchy

In addition to alternative names, administrators can define the user's, corporate hierarchy. **Corporate hierarchy** lists addresses by corporate departmental structure. Defining a user in the corporate hierarchy is a common way of finding a person in the directory in many corporations.

Adding corporate hierarchy information to a user

Users are often identified by their position in the corporate hierarchical structure. Follow these steps to add corporate hierarchy information.

Step	Action
1	From **Domino Administrator**, select the appropriate server.
2	Click the **People & Groups** tab→**Domino Directories** section→ *Your* **Directory** section→**People** view.
3	Select the user, and click **Edit Person**.
4	Click the **Work/Home** tab→**Corporate Hierarchy Information** tab.
5	Add the correct information for the user's position in the corporate structure.
6	Click **Save & Close**.

Managing Groups

Groups are lists of users, groups, and servers that have common traits. They are useful for mailing lists and access control lists. Using groups can simplify administration tasks.

By default, the Domino Directory contains two groups:

- **LocalDomainServers** - all servers in the current domain. Domino automatically adds servers that you register in the current domain to this group.
- **OtherDomainServers** - all servers that are not in the current domain.

Group types

The **group type** specifies the purpose of the group and determines the views in the directory and Domino Administrator where the group name appears. For example, mailing list groups appear on the **Messaging** tab in the **Mail Users** view. Domino applications include the following default group types.

Group Type		Description
	Multi-purpose	Use for mail and access control to databases and servers. This is the default group type.
	Access Control List only	Use to control access to servers and databases only.
	Mail only	Use for mail distribution lists only.
	Servers only	Use in Connection documents. This group type displays in the Domino Administrator client's Domain Bookmarks for grouping purposes.
	Deny List only	Use to deny terminated users, or other users, access to the Domino environment. This group type does not appear in the Groups view. The Administration Process will not delete members of the group.

Managing Groups...(continued)

View groups

Follow these steps to view the current groups.

Step	Action
1	From **Domino Administrator**, select the **Hub/SRV/WWCorp** server.
2	Click the **People & Groups** tab→**Domino Directories** section→ **WWCorp's Directory** section→**Groups** view. **Result:** What symbol indicates a multi-purpose group?
3	List the group names in each of the following categories. **Result:** ■ Mail only: ■ Access control list only:

Creating a new group

New groups are created to support additional organizational needs. For example, a team is formed for a specific project. A multi-purpose group is used as a mailing list and to determine access to team-specific databases. Administrators require the Domino Directory [GroupCreator] role.

Manageable group names

There is no limit to the number of names in a group. However, the total number of characters used for names in the group cannot exceed 15 KB. To keep groups manageable, split a large list of users into two or more groups.

Managing Groups..._(continued)_

Creating a deny access group

Worldwide Corporation requires a terminations group. When employees leave the company, they are added to this Deny Access list to prevent them from accessing the server from an ID they may have taken with them.

Follow these steps to create a terminations group.

Step	Action
1	From **Domino Administrator**, select a server.
2	Click the **People & Groups** tab→**Domino Directories** section→ _Your_ **Directory** section→**Groups** view.
3	Click **Add Group**.
4	On the **Basics** tab, complete the following fields: ■ **Group name:** Unique name describing the group's use, for example, `Discharged Employees` ■ **Group type: Deny List only** ■ **Description:** Group definition that appears in the view ■ **Members:** Users recently removed from the system. For example, deleted users. Enter names or press ENTER to select from a directory.
5	On the **Administration** tab, complete the following fields: ■ **Owners:** Users allowed to change the group membership ■ **Administrators:** Users allowed to edit the Group document ■ **Allow foreign directory synchronization:** Group is copied to foreign directories during synchronization.
6	Click **Save & Close**.

Note: Deny List only groups appear in the Domino Directory in the Deny Access Groups view.

Renaming a Group

To guarantee a name change is propagated throughout an organization, administrators should rename a group using the Administration Process.

Administration Process rename group requests

The following table lists the places a group name is updated and the timing.

Renames Group in...	When	Result
Domino Directory	1 hour	Updates the group's name in the Domino Directory, except in Person documents.
Access Control List	1 hour	Each server in the domain updates the group's name in ACLs of databases for which it is an administration server.
Person documents	Daily	Updates the name in Domino Directory Person documents.
Reader/ Author fields	Weekly	Each server in the domain updates the group's name in the Reader/Author fields of the databases for which it is named as Administration server and that have specified the ACL option **Modify all Reader/Author fields**.

Note: The timing shown for each task is the default.

Changing a group name

Administrators require the Domino Directory [GroupModifier] role to rename a group. Follow these steps to rename a group using the Administration Process.

Step	Action
1	From **Domino Administrator**, select a server.
2	Click the **People & Groups** tab→**Domino Directories** section→ *Your* **Directory** section→**Groups** view.
3	Select the group to rename.
4	Choose **Actions**→**Rename Group**.
5	Click **Yes** to confirm the rename.
6	Enter the new name, and click **OK**.
7	Click **OK** to complete the rename.

Deleting a Group

Deleting a group affects many different elements of the Domino environment. Use the Administration Process request **Delete** group in the Domino Directory to delete a group.

Delete group requirements

Administrators require one of the following access levels in the Domino Directory to delete a group:

- Author with Delete documents access and the [GroupModifier] role
- Editor with Delete documents access

Deleting a group

Once administrators have the correct privileges, they can delete any group. Follow these steps to delete a group.

Step	Action
1	From **Domino Administrator**, select a server to administer.
2	Click the **People & Groups** tab→**Domino Directories** section→ *Your* **Directory** section→**Groups** view.
3	Select the group for deletion.
4	Click **Delete Group**, and click **Yes** to continue. **Result:** If the server is running Windows NT, Domino Administrator will prompt to delete the corresponding group account from Windows NT User Manager.
5	Click **Yes** to delete the group account.
6	Select one of the following options: ■ **Yes:** Immediately deletes all references to the group in the current replica of the Domino Directory. ■ **No:** Posts a **Delete in Directory** request in the Administration Requests database. The Administration Process deletes references to the group in the Domino Directory and database ACLs.
7	Click **OK**.

Changing Group Membership

In addition to creating, renaming, and deleting groups, administrators may need to change a user's group membership. For example, a user moves to a different position in the company and now requires a different set of group affiliations reflecting new responsibilities.

Viewing group membership

Maintaining group membership requires determining the groups a user belongs to. Follow these steps to view group membership.

Step	Action
1	From **Domino Administrator**, select a server.
2	Click the **People & Groups** tab.
3	Choose **Tools→Groups→Manage**.
4	From the **People and Groups Look in** drop-down box, select the appropriate directory.
5	Select a group from the listing in the left pane.
6	From the **Group Hierarchies Look in** drop-down box, select the appropriate directory listing.
7	Select **Only member hierarchies**.
8	Expand groups to view the membership for the group.
9	Click **Done**.

Assign Users to a Group Exercise

Classroom Scenario

Worldwide Corporation uses an application database to record User and Technical Support calls. Only the support staff needs access to this database.
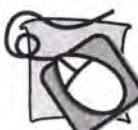
Create a group

Create a group with the following characteristics:

- A name reflecting how the group is used
- A group type appropriate to use
- Members, including:
    - All servers - for replication
    - Two users you created earlier
    - All administrators

Answer the following questions:

- What did you name the group?

- What group type did you use?
  Why?

- List the group members.

Perform the following tasks:

- Change one member to a different group.
- (Optional) Delete the group you just created.

Managing Notes and Non-Notes Clients

It is not always possible, practical, or necessary for every employee in a company to have access to a computer with a Lotus Notes client. This lesson covers how to manage users who need to access the Domino environment using a Notes client and a non-Notes client.

Objectives

After completing this lesson, you should be able to:

✓ Set up browser clients.
✓ Update Notes client software.

Non-Notes Client Users

Non-notes client users are users who do not use a Notes client to access the Domino environment through a Web browser or another e-mail client. A Domino server supports these internet protocols used by non-Notes clients: IMAP, LDAP, POP3, and HTTP.

User types include:

- **Registered users:** Users listed in the Domino Directory or a trusted directory with:
    - A valid user name and password
    - A valid Internet (X.509) certificate
- **Non-registered users:** Users who do not have an Internet (X.509) certificate, Internet password, or are not listed in the Domino Directory or a trusted directory.

Registered users

Registered users listed in the Domino Directory or a trusted directory can access restricted resources on the Web server. To register a non-Notes client user, an administrator can do any of the following:

- Create a Person document in the Domino Directory.
- Set up Directory Assistance to authenticate via a trusted directory.
- Refer to Lotus Domino Administrator 6 Help topic *Name-and-password authentication for Internet/intranet clients* for more information.
- Build a registration application to allow users to register themselves.

Non-registered users

A non-registered user is assigned the user name **Anonymous** when accessing the Domino Web server:

- By default, the Domino Web server allows Anonymous access.
- If the administrator prevents Anonymous access, all Web clients will be required to provide a name and password in order to access the server.

Registering a Non-Notes Client User

As mentioned earlier, there are three ways to register non-Notes client users. The most straightforward way is creating a Person document for the user.

Classroom Scenario

A new Sales department employee needs to access mail via a Web browser. Since she will need access to many restricted databases, she must be registered in the Domino Directory.

Register the non-Notes client user

Follow these steps to create an entry for the new user.

Step	Action
1	From **Domino Administrator**, select your assigned server.
2	From the **People & Groups** tab, choose **Tools→People→Register**.
3	Enter the certifier password, and click **OK**.
4	If necessary, on the **Certifier Recovery Information Warning** dialog box, click **OK**.
5	Select **Advanced** to see more registration options.
6	On the **Basics** panel, complete the following fields: ■ **Registration Server:** Your assigned server ■ **First name** and **Last name:** Make up a name ■ **Password:** lotusnotes ■ **Password Options:** 　■ **Password Quality Scale: Weak password, not very secure (4)** 　■ Select **Set internet password**. 　■ Click **OK**.

Registering a Non-Notes Client User...(continued)

Register the non-Notes client user...

Step	Action
7	On the **Mail** panel, complete the following fields: ■ **Mail System:** POP ■ **Mail Server:** Your assigned server ■ **Mail file owner access:** Manager
8	If necessary, on the **Address** panel, complete the following fields: ■ **Internet Domain:** wwcorp.com. ■ **Internet address:** FirstInitialLastName@wwcorp.com
9	On the **ID Info** panel, complete the following fields. ■ Deselect **Create a Notes ID for this person.** ■ **Certifier Name List:** Your regional certifier ID (either East.id or West.id)
10	Click ✓ to add the user to the Registration Queue.
11	Click **Register**.
12	Click **OK** to confirm the user was successfully registered, and then click **Done**.

Testing User Access

To complete the procedure of adding a non-Notes client user, test the user's access to mail via a Web browser.

Test access to the mail database from a Web browser

Follow these steps to open the user's Mail database from a Web browser.

Step	Action
1	Open a Web browser.
2	Enter the URL for the mail database. For example, enter: `http://hub.wwcorp.com/mail/mgrassi.nsf` **Result:** A dialog box displays stating Do you want to install and run "**Lotus Domino applet.**"
3	Click **Yes**.
4	Enter the user name and password.
5	Once you have successfully opened the mail database, close the Web browser.

Distribute user information

After a successful test, distribute the login information to the user. Distribution options include:

- Give a hard copy of the information to the user during client setup.
- E-mail the information to the user using an alternate e-mail system.
- Place the user information in a secure database on a Web site where users can maintain their user information and change their password.
- Use postal mail to send the information to the user.

Upgrading Client Software

IBM Lotus Notes Smart Upgrade allows administrators to configure and distribute Notes client upgrades to any subset of clients using Notes as a distribution mechanism, eliminating the need for desk side visits.

Checklist: Setting up Lotus Notes Smart Upgrade

Administrators create the kit database, download kits from the Lotus Developer Domain, and create associated kit documents. Lotus Notes Smart Upgrade utilizes a database based on the SmUpgrade.ntf template. Follow these steps to set up Lotus Notes Smart Upgrade.

Task	Procedure
1	Create the Lotus Notes Smart Upgrade database.
2	Add a database link to the Configurations Settings document.
3	Obtain an upgrade kit.
4	Create a document for the Smart Upgrade kit.
5	Create or modify desktop settings with upgrade information.
6	Create or modify a master policy and add the desktop policy.
7	Assign policy to Person document(s) or one or more groups.

Task 1: Create the Lotus Notes Smart Upgrade database

Follow these steps to create the Lotus Notes Smart Upgrade database.

Step	Action
1	In the **Domino Administrator**, choose **File→Database→New**.
2	In the **New Database** dialog box, enter the following information: ■ **Server:** `<your server name>/SVR/WWCorp` ■ **Database title:** `Smart Upgrade Kits` ■ **File Name:** `smartupg.nsf`
3	Select your sever as the template server.
4	Select the **Show advanced templates** checkbox.
5	Select **Smart Upgrade Kits (6)** (SmUpgrade.ntf) from the list, and then click **OK**. **Result:** The database is created and opens.

Upgrading Client Software...(continued)

Task 2: Add a database link to the Configuration Settings document

Follow these steps to add the Lotus Notes Smart Upgrade database link to the Configurations Settings document.

Step	Action
1	With the Smart Upgrade Kits database open, choose **Edit→Copy As Link→Database Link**.
2	From **Domino Administrator**, click the **Configuration** tab→ **Server** section→**Configurations** view.
3	Select the appropriate Configuration Settings document, and click **Edit Configuration**.
4	On the **Basics** tab, right-click inside the **Smart Upgrade Database link** field, then choose **Paste**.
5	Click **Save & Close**.

Task 3: Obtain an upgrade kit

Download an upgrade kit from the Lotus Developer Domain at the following URL:

```
http://www-10.lotus.com/ldd/down.nsf
```

Task 4: Create a document for the Smart Upgrade kit

Follow these steps to add the upgrade kit to the Lotus Notes Smart Upgrade database.

Step	Action
1	With the Smart Upgrade Kits database open, click **New Kit**.
2	Use the following table to complete the fields on the **Basics** and **Data** tabs.
3	Click **Save & Close**.
4	Select the document you just created and click **Enabled**.

Upgrading Client Software...(continued)

The Lotus Notes Smart Upgrade Kits database

The following table describes the fields in the Lotus Notes Smart Upgrade Kits database main view.

Field Name	Description
Basics tab	
Source version	The minimum version of Notes required on the client for this kit. The source version needs to exactly match the version string displayed in **Notes Help→About**. If there is an * in the field (usually for full install kits), any version of Notes client can use this kit to upgrade.
Destination version	The version of Notes in the upgrade kit. This value is used to string together multiple upgrade kits. For example: ■ V6.0→V6.1 ■ V6.1→V6.2
Operating system	The operating system for which the upgrade kit is designed.
Localization	The language of the upgrade kit.
Restart Lotus Notes after upgrade completes	Select this option to automatically restart the Notes client after the upgrade.
Enabled	Select this option to enable the kit to be used for upgrades.
Data tab	
Location of Upgrade Kit	■ Select **Attached to this note**, and then attach the upgrade kit file in the **Attach Upgrade Kit here** field. ■ Select **On a shared network drive**, and then enter the complete path to the network drive that stores the upgrade kit in the **Full path to Upgrade Kit** field.
Optional arguments	Enter any arguments to be used when launching the setup program.
Administration tab	
Allowed Users	Enter the names of users who are allowed to use this Upgrade Kit. If the field is empty, all users can use it.

Upgrading Client Software...(continued)

Using Policy documents to update client software

Refer to *Appendix D: Additional Reference Material* for more information on completing the following three tasks:

- Task 5: Create or modify desktop settings with upgrade information
- Task 6: Create or modify a master policy and add the desktop policy
- Task 7: Assign policy to Person document(s) or one or more groups
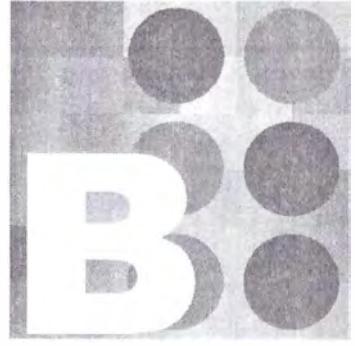
Maintaining Servers

Lesson 3 Managing Servers

Lesson 4 Updating Servers

Managing Servers
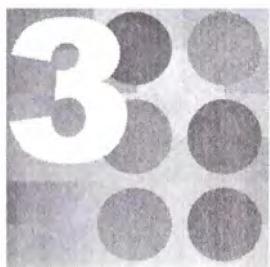
An important part of an administrator's responsibilities is ensuring that the data stored on Domino servers is up-to-date and highly available. For this reason, it is important to have a full backup of important data ready to be restored in the event data has been damaged during a server crash.

Objectives

After completing this lesson, you should be able to:

- ✓ Use the server console window.
- ✓ Plan a backup process.
- ✓ Enable transaction logging.
- ✓ Analyze Activity data.
- ✓ Automate server tasks.

Using the Server Console Window

The Domino server console displays in a window during startup. Administrators can issue commands using this server console window. The following figure shows an example of Hub/SVR/WWCorp server console during startup.

Set properties for the server console window

If the window properties are not set correctly, an administrator could accidentally pause the server, thereby preventing users from accessing the server. Follow these steps to set the properties for the server console window.

Step	Action
1	Click ▓ in the Window Title Bar, and then choose **Properties**.
2	In the **Edit Options** section, deselect **QuickEdit Mode**.
3	Click **OK**.
4	Select **Modify shortcut that started this window**, and click **OK**.

Best practices for using the server console window

After setting up a Domino server, it is best to secure the server machine in a locked room to prevent unauthorized access. Therefore, after server setup, there is usually little need to use the server console window. All server console administration can be accomplished using either Domino Console or Domino Administrator.

Defining a Backup Process

After determining and documenting the current infrastructure, perform a complete backup of all servers before making any changes. Whether the infrastructure is new or was previously in place, a new administrator should establish a basis from which to recover lost data.

There are two choices for backup procedures:

- Backup using the traditional method of making copies of files.
- Backup using transaction logging: Transaction logging creates log files that capture database changes allowing faster database updates and easier backup.

Other important files to back up

In addition to a full backup of files, copy the following ID files to a disk and store the disk in a secure place:

- Server IDs
- Organization and Organizational Unit certifier IDs
- Administrator and user IDs

	Never rely on replication as the sole method of database backup. Multiple copies of data in multiple locations does not ensure data integrity. A damaged or accidentally changed database may replicate, with the only recourse being to recover the database from a server backup.
Caution	

Backup utilities

Backup utilities are available for Domino 6. For more information on backup utilities, refer to the following Web sites:

- Lotus Developer Domain, http://www-10.lotus.com/ldd
- IBM Tivoli software, http://www.ibm.com/software/tivoli

Defining a Backup Process...(continued)

Best practices for backups

The following guidelines describe recommendations for backups and apply to both methods of backup:

- Back up all Domino server data files, including:
  - Databases, template files, the Notes.ini file, ID files, and certifiers
  - Files that may remain open during backup
    Domino keeps some files open while it runs (Log.nsf, Names.nsf, Mail.box and the server ID file). If the backup utility cannot back up open files, shut down the server before creating the backup file.
  - User mail files
- Back up servers before and after major network changes.
- Using the company's standardized backup procedures, back up files either directly to media or to a file server and then to media.

Suggested process for maintaining current data

Back up databases (or logs in the case of transaction logging) incrementally Monday through Thursday and perform a full backup on Friday.

Use a process that ensures backup on any given date. The following describes one suggested process which ensures the data is current as of:

- Yesterday (as a result of last Friday's full backup and this week's incremental backups)
- Each Friday of this month
- The last Friday of each month over the past 12 months
- The last Friday of each year the process has been in place

When to reuse media

The following are guidelines on using new media vs. reusing media:

- Reuse the media containing incremental backups each week.
- Use new media for backups on the last Friday of each month.
- Reuse the media on Friday of each month, except on the last Friday (use new media).
- Reuse each "last Friday" media each year, except the last one of the year.

What is Transaction Logging?

A single transaction is a series of changes made to a database on a server — for example, a transaction might include opening a new document, adding text, and saving the document.

Transaction logging allows the capture of system database changes to a log. If a system or media failure occurs, databases are recovered using the transaction log and a third-party backup utility.

Transaction logging benefits

The following table lists the main benefits of transaction logging.

Feature	Benefit
In most cases, there is no need to run Fixup to recover databases after a server crash.	Quicker server restarts. Transaction log recovery applies or undoes only those transactions not written to disk at the time of the system failure.
Provides less possibility of corruption of databases.	Data is written to a log, then from the log to the database. It is not committed to the database until the writing process is satisfied that it is written with full integrity.
Allows Domino to defer database updates to disk during periods of high server activity.	■ Saves processing time. ■ Transactions are recorded sequentially in the log files, which is much quicker than database updates to random, nonsequential parts of a disk. ■ Because the transactions are already recorded, Domino can safely defer database updates until a period of low server activity.
Simplifies daily backup procedures.	Use a backup utility to perform daily incremental backups of the Transaction logs, rather than perform full database backups.

Note: Fixup is a server task that fixes any inconsistencies resulting from partially written operations after a server failure, power failure, or hardware failure. Database corruption is much less likely to occur in databases for which transaction logging is enabled. For more information on when to run Fixup, refer to **Technote 183377** *When Should FIXUP Be Run on a Database?* on the Lotus Support Services Web Site at http://www-3.ibm.com/software/lotus/support.

What is Transaction Logging?...(continued)

Database identifiers and transaction logging

When transaction logging is enabled, Domino uses a unique database identifier, the **Database Instance ID** (DBIID), to match transactions with specific databases.

Some database maintenance activities cause Domino to assign a new DBIID to a database. As a result, Domino cannot restore these old transactions to the database because the transactions are linked to the database using the DBIID.

Domino assigns a new DBIID to a database under the following circumstances:

■ Transaction logging is enabled for the first time.
■ The log path or maximum log size is changed after initial setup and use.
■ A database is moved from one logged server to another logged server, or from a server not enabled for logging to a logged server.
■ Compact server task is run with an option other than -b (In-place compacting with space recovery only).

    For more information on the different styles and options for the Compact server task, refer to the Lotus Domino Administrator 6 Help topic *Compact options*.

■ Fixup task is run on corrupt databases. This repairs corrupted views and documents.

Note: The Domino Server Log (Log.nsf) or console displays when the DBIID has changed and recommends a new backup.

Using Transaction Logging

Transaction logging is available with the Domino Utility Server and Domino Enterprise Server types, and is configured in the Server document.

Transaction logging styles

The following table lists the transaction logging styles.

Style	Description
Circular	Transaction log files are reused in a cycle based on size. The size can be from 192MB to 4GB, as defined in the Server document. Old transactional logs are overwritten.
Archive	Transaction log files are not overwritten. New logs are created as needed and occasionally older inactive logs are archived to archive media. Active logs remain in the log directory.
Linear	Transaction log files are reused in a cycle with no size limit. Administrators backup and recover without archiving logs to media. The logs are reused, extending the size of the log, which provides a longer window of time for standard database backup recovery.

Performance considerations

Periodically, transaction logging creates a recovery checkpoint record in the Transaction log that lists each open database and the starting point transaction needed for recovery.

The following table lists the choices for determining how often transaction logging records checkpoints.

Option	Description
Standard (default)	Records checkpoints regularly
Favor runtime	Records fewer checkpoints: ■ Requires fewer system resources ■ Improves server run-time performance ■ Increases server restart time
Favor restart recovery time	Records more checkpoints: ■ Improves restart recovery time ■ Uses more system resources

Using Transaction Logging...(continued)

Enable transaction logging
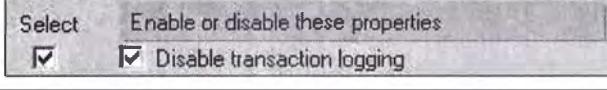
Follow these steps to begin to log database transactions on your assigned server.

Step	Action
1	From **Domino Administrator**, click the **Configuration** tab→**Server** section→ **All Server Documents** view.
2	Select your assigned server, and then click **Edit Server**.
3	Click the **Transactional Logging** tab.
4	Complete the following fields: ■ **Transactional logging: Enabled** ■ **Log Path:** C:\Lotus\Domino\Data\Logdir (unless told otherwise by the instructor) ■ **Logging style: Circular** ■ **Maximum log space:** 20 MB
5	Click **Save & Close**.
6	Restart the Domino server to begin logging database transactions.

Disabling transaction logging for multiple databases

Transaction logging is enabled for the server, but administrators can disable transaction logging for particular databases. For example, consider disabling transaction logging for a database containing documents that do not change frequently. Follow these steps to select multiple databases and disable transaction logging.

Step	Action
1	From **Domino Administrator**, click the **Files** tab.
2	Select the databases that should not be included in the Transaction logs.
3	Choose **Tools→Database→Advanced Properties**.
4	Select the boxes as shown in the following figure: Select Enable or disable these properties ☑ ☑ Disable transaction logging
5	Click **OK**.

Using Transaction Logging...(continued)

Transaction logging best practices

There are some database backup guidelines specific to transaction logging. The following table lists suggested schedules.

Backup	Schedule
Full database	Whenever database receives a new DBIID
Logged databases	Full backups weekly
Database not being logged	More than once a week
Transaction log	■ Incrementally Monday through Thursday ■ Full backup on Friday

The following outlines additional backup considerations:

■ Archive Transaction Log files (use a backup utility to schedule archiving of log files).

■ Use a dedicated device with a separate controller and an empty drive with a large amount of space (192 MB minimum).

■ When using Compact:

- Carefully schedule compactions.

- Schedule compaction with a full database backup when using the Compact task with the options, such as reduce file size.

■ Carefully schedule Fixup tasks (or do not use Fixup).

Note: For more information refer to the Lotus Domino Administrator 6 Help topic *Transaction logging*.

What is View Logging?

View logging is an extension of transaction logging. With view logging enabled, views do not require rebuilding during server restart because the information is captured in the Transaction log and restored from that log resulting with less server downtime.

Viewing logging considerations

The following is a list of considerations regarding view logging:

- Individual views must have view logging enabled.
- Only Domino 6 databases can use view logging.
- Criteria to use when deciding to enable view logging:
  - Traffic volume
  - Visibility
  - Business criticality
- Full view rebuilds are not logged.

Enable view logging

Follow these steps to enable view logging for the **All Documents** view in your mail file.

Step	Action
1	From the **Files** tab, open your mail file.
2	Choose **View→Design**. **Result:** Domino Designer opens displaying the mail file's design elements.
3	In the **Bookmarks** pane, expand **Views** (click the +).
4	Scroll down to select the **($All)** view.
5	Click **OK** on the informational message. **Result:** The view and its properties dialog box display.
6	In the **View** properties dialog box, select the 🕿 tab.
7	In the **Logging** section, select **Include updates in transaction log**.
8	Choose **File→Save**, and then **File→Close**.
9	Close Domino Designer.

Using Activity Logging

Activity logging tracks server usage by database, user, protocol, and activity, by retrieving activity data from the Domino Server Log (Log.nsf). Graphic charts that break down server activity by user and database answer the question "what is the server doing?". Domino logs only activity that can be assigned to a specific user, not overhead like indexing and compaction.

Companies can use this information to:

■ Track usage by department or business unit for determining charge back amounts.

■ Monitor usage as it impacts server performance in order to balance usage between servers.

■ Plan for system resources and clustering requirements.

Configuring activity logging

Administrators enable and configure activity logging in the **Configuration Settings** document. The fields on the **Activity Logging** sub-tab determine how frequently to log activity session data. The frequency interval is called a **checkpoint**. The following table describes these fields.

Field	Description
Enabled logging types	The server tasks to use to produce activity logging data. Some examples include: ■ Domino.Notes.Database ■ Domino.Notes.Session ■ Domino.Replica ■ Domino.Mail ■ Domino.HTTP
Checkpoint interval	The frequency (in minutes) for creating checkpoint records. The default is 15 minutes.
Log checkpoint at midnight	Select **Yes** to automatically create Notes session and Notes database checkpoint records every day at midnight.
Log checkpoints for prime shift	Select **Yes** to automatically create Notes session and Notes database checkpoint records every day at the beginning and end of a specific time period.
Prime shift interval	Specify the start and end time for the prime shift.

Using Activity Logging...*(continued)*

Starting activity logging on a server

Follow these steps to start logging activity data on a server.

Step	Action
1	From **Domino Administrator**, click the **Configuration** tab→ **Server** section→**Configurations** view.
2	Select the appropriate Configuration Settings document, and click **Edit Configuration**.
3	Click the **Activity Logging** tab.
4	Select **Yes** next to **Activity Logging is enabled**.
5	Select the appropriate **Enabled logging types**.
6	Enter the appropriate **Checkpoint interval**.
7	Select **Yes** next to **Log checkpoints at midnight**.
8	Select **Yes** next to **Log checkpoints for prime shift**.
9	Select a range for the **Prime shift interval**.
10	Click **Save & Close**.

Analyzing the Activity Data

Domino writes the activity logging information in the Domino Server Log (Log.nsf). There are different methods for analyzing the activity data:

- Run an activity analysis.
- Write a Notes API program to access the information in the log file.
- Use a tool to analyze past activity trends (requires IBM Tivoli Analyzer for Lotus Domino).

For more information about activity logging data in the Log file, refer to the Lotus Domino Administrator 6 Help topic *The information in the log file*.

Running **Activity Analysis** creates detailed information about the types and quantity of activity on the Domino server. The results are stored as documents in the Activity Analysis database, Loga4.nsf.

Run an activity analysis to determine usage

Follow these steps to analyze activity data in the log file, and answer the questions.

Step	Action
1	Click the **Server** tab→**Analysis** tab.
2	Choose **Tools→Analyze→Activity**.
3	In the **Server Activity Analysis** dialog box, verify the following fields: ■ **Start Date:** Yesterday ■ **End Date:** Today
4	Click **OK**. **Result:** Domino Administrator generates and opens the Activity Analysis database.
5	In the results database, expand the **Server Activity** section. ■ Which database has your user ID used most today? ■ Which Notes user sent and received the most bytes today? ■ What is the combined content length of all HTTP requests?
6	Close the **Activity Analysis** database.

Analyzing the Activity Data...(continued)

IBM Tivoli Analyzer for Lotus Domino

Activity trends aid in the planning and maintaining of a Domino environment.
A separate product, IBM Tivoli Analyzer for Lotus Domino, also helps
administrators identify the critical server information to monitor and manage the
overall health of a Domino server. This product includes two integrated system-
management tools:

- Server Health Monitor: Offers real-time assessment and recommendations for
  server performance.
- Activity Trends: Provides data collection, data exploration, and resource
  balancing.

Refer to *Appendix C: IBM Tivoli Analyzer for Lotus Domino* for more information.

Automating Server Tasks

The Domino server requires regular, scheduled maintenance to function properly. The following table shows the most common server tasks that should be scheduled to run regularly.

Server Task	Description
Updall	Updall performs the following functions: ■ Updates any view indexes or full-text search indexes that: 　■ Need updating 　■ Are corrupted ■ Purges deletion stubs from databases ■ Discards view indexes for views that have been unused for 45 days, unless otherwise specified in the database design
Compact	Compact performs the following functions: ■ Recovers unused space after documents are deleted ■ Reduces the file size of a database

Options for automating server tasks

To ease the workload for administrators, tasks that regularly run on a Domino server are defined in the initialization file (Notes.ini). There are other ways to automatically run tasks or programs, each with certain characteristics.

Option	Criteria
Initialization file (Configuration Settings document/Notes.ini)	■ Schedule daily tasks for particular time (on hourly basis). ■ Add specific tasks. ■ ServerTasks setting starts tasks automatically every time the server starts. ■ ServerTasksAt setting starts tasks at a specified time.
Program documents	■ Are assigned to particular servers. ■ Schedule for time, repeat interval, or days of week. ■ Enable/Disable flag. ■ Run tasks, defined programs, or executables.
Agents	■ Define per database only. ■ Schedule for time, day, week, month, or manually. ■ Select documents to include. ■ Run actions, formulas, LotusScript®, or JavaScript.
Administration Process	■ Automate server tasks.

Automating Server Tasks... *(continued)*

Classroom Scenario

From monitoring log files, Worldwide Corporation's administrators determined that the Compact server task is not running regularly.

Change the schedule to run Compact every other day and to compact using the **In-place compacting with space recovery only** style in order to prevent the assignment of new DBIIDs on transaction logged databases.

Automate the Compact task with a Program document

Follow these steps to automate the Compact task with a Program document.

Step	Action
1	Click the **Configuration** tab→**Server** section→**Programs** view.
2	Click **Add Program**.
3	Complete the following fields: ■ **Program name:** Compact ■ **Command line:** -b ■ **Server to run on:** Your assigned server ■ **Enabled/disabled: Enabled** ■ **Run at times:** 3:00 AM ■ **Repeat interval of:** 0 ■ **Days of week: Mon, Wed, Fri**
4	Click **Save & Close**.
5	To view the schedule, do one of the following: ■ Select the **Server** tab→**Status** tab→**Schedules** section→**Programs** view. ■ Issue the Show schedule server console command.
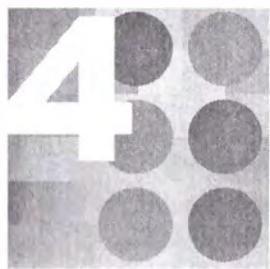
Updating Servers

When the Domino environment changes, administrators may need to update Domino servers to accommodate the changes. For example, Worldwide Corporation may decide to:

- Share one of its databases with a customer.
- Consolidate servers.
- De-centralize administrative tasks to the regions.

Objectives

After completing this lesson, you should be able to:

- ✓ Set up communication with another organization.
- ✓ Change server access.
- ✓ Find all references of a server in a domain.
- ✓ Analyze the effect of placing a server out-of-service.
- ✓ Recertify a server ID.
- ✓ Change administrators' access.

Authenticating With Another Organization

If two companies wish to access each other's servers to route mail or replicate databases, the two companies need to **cross-certify**. Cross-certification is required if two entities, servers or users, do not share a certificate in common.

What is cross-certification?

Cross-certification allows servers and users with no common ancestral heritage to authenticate. Two important facts about cross-certification are:

- Cross-certification is a two-way process. Both organizations need to cross-certify each other.
- Cross-certification can be to or from an organization, organizational unit, server, or user.

Results of the cross-certification process

Cross-certification requires two-way trust. During the cross-certification process:

- Each organization cross-certifies an ID from the other organization.
- Each organization stores the cross-certificate it issues in the Domino Directory (or Personal Address Book for users).

What cross-certification does not do

Cross-certification does **not**:

- Alter either organization's hierarchical structure, any server's or user's distinguished name, or any ID.
- Necessarily give the other organization access to all your servers.
- Override server access control.
- Replace ACLs as the primary control mechanism for database access.

Authenticating With Another Organization... *(continued)*

Cross-certificate example

The following diagram shows that Marcus Frank can authenticate with the East01 server because he has a certificate from the same hierarchy as the server. However, Victor Jones cannot authenticate with East01 because his certificate originated from another hierarchy.

Victor Jones needs to obtain a cross-certificate to the WWCorp hierarchy. East01 also needs a cross-certificate to the Earth hierarchy.

The boxes in the diagram indicate IDs that contain certificates and keys.
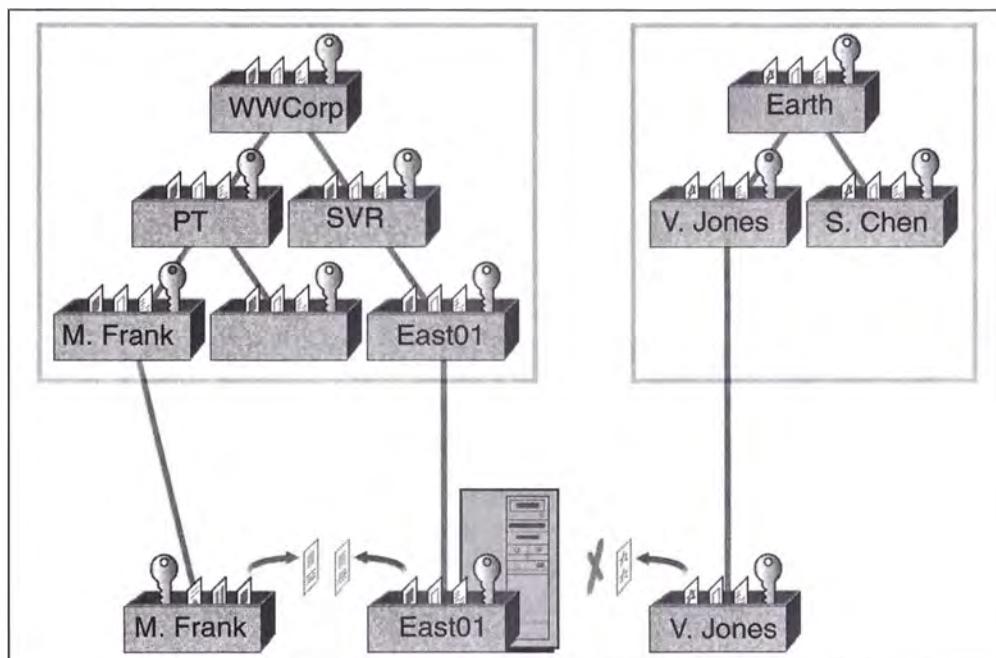
Note: Cross-certification does not need to be symmetric. Victor Jones can cross-certify at the SVR or WWCorp level.

Cross-Certifying Certifiers

A company can issue cross-certificates between Organization or Organizational Unit certifiers. This type of cross-certification is appropriate when:

- Company A wants to grant access to multiple servers in its organization to a specific branch of Company B.
- Company A wants to have access to a particular branch of Company B's organization.
- Two organizations merge.

Certifier–to–certifier example

The following figure shows an example of two companies that have cross-certified at the certifier level.
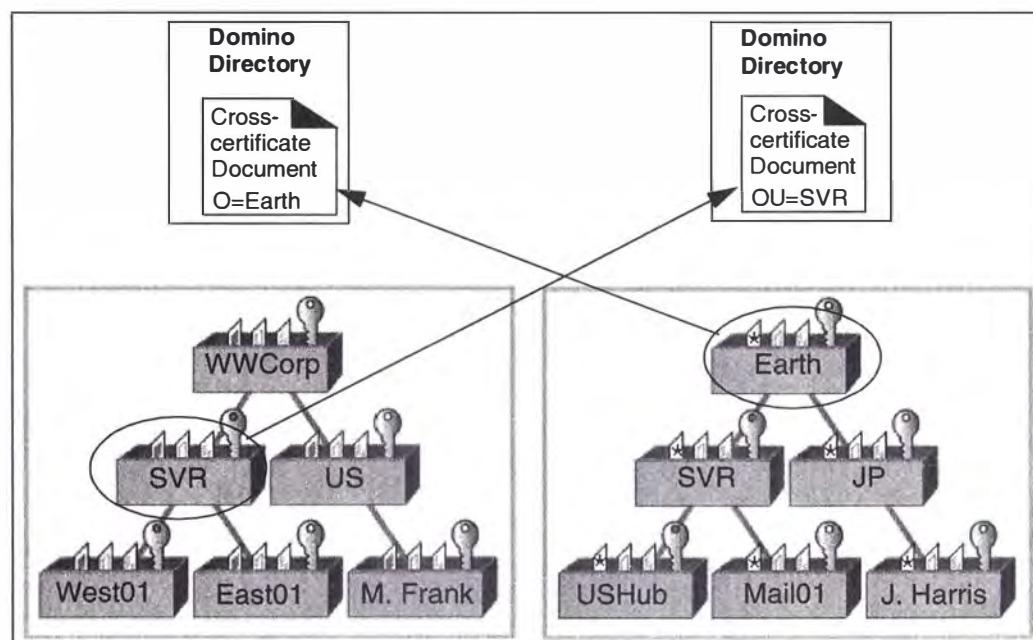
The following table shows the cross-certificates.

Cross-Certificate Issued by...	Cross-Certificate Issued to...	Cross-Certificate Stored in Directory for...
/SVR/WWCorp	/Earth	WWCorp Domain
/Earth	/SVR/WWCorp	Earth Domain

/O=Earth and OU=SVR/O=WWCorp are cross-certified. This permits any user or server certified by Earth to authenticate with any user or server certified by /SVR/WWCorp.

Cross-Certifying a Certifier and Server

A company can issue cross-certificates between an organization or organizational unit and an individual server or user. This type of cross-certification is appropriate when:

- Company A wants a specific server from Company B to have access to multiple servers in Company A's organization.
- Company A wants to authenticate with Company B's organization, but wants to limit their access to Company A's organization.

Certifier–to–server example

The following figure shows an example of two companies that have cross-certified a certifier and a server.
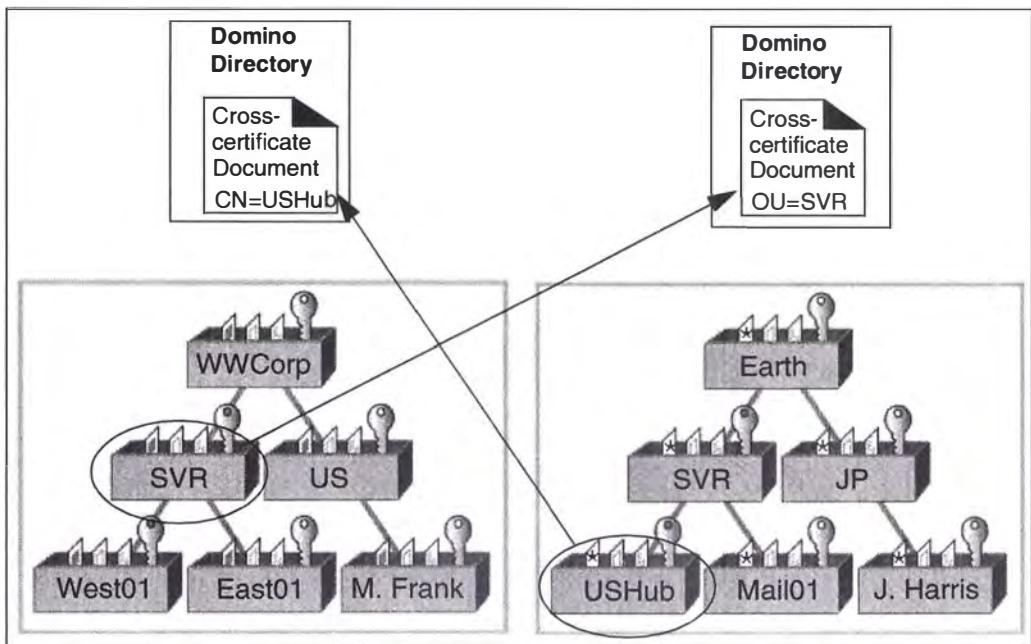
The following table shows the cross-certificates.

Cross-Certificate Issued by...	Cross-Certificate Issued to...	Cross-Certificate Stored in Directory for...
/SVR/WWCorp	USHub/SVR/Earth	WWCorp Domain
USHub/SVR/Earth	/SVR/WWCorp	Earth Domain

The organizational unit, OU=SVR/O=WWCorp, is cross-certified with the server USHub/SVR/Earth. USHub is the only server in O=Earth that can authenticate with any server or user certified by /SVR/WWCorp.

Cross-Certifying Servers

A company can issue cross-certificates between individual servers or users. This type of cross-certification is appropriate when servers in different organizational units need access to the server of the other group, for example, to replicate databases stored on two servers.

Server–to–server example

The following figure shows an example of two companies that have cross-certified at the server level.
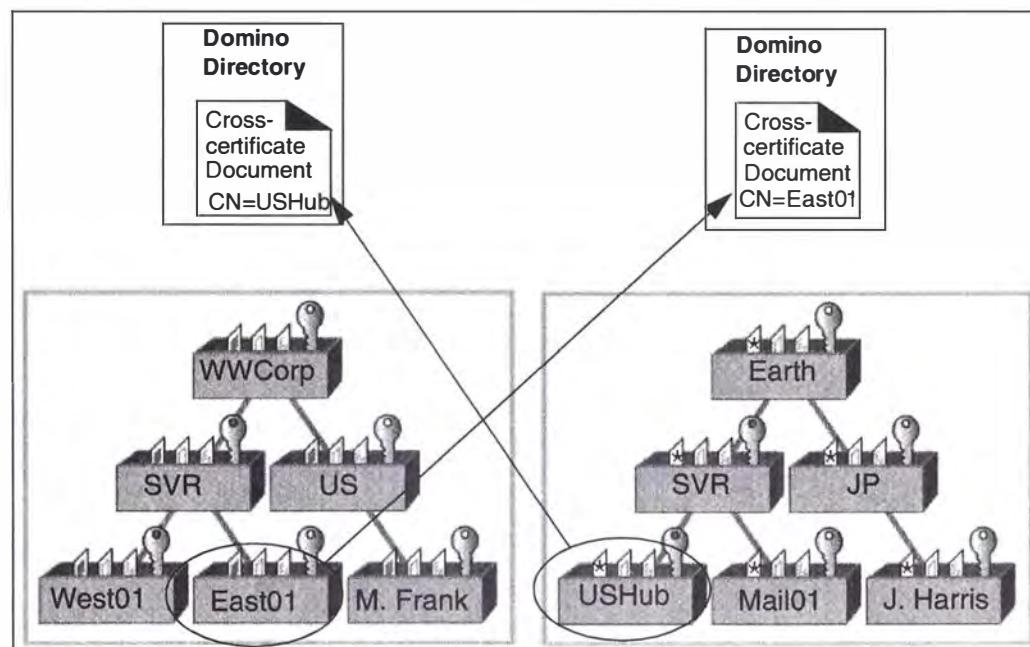
The following table shows the cross-certificates.

Cross-Certificate Issued by...	Cross-Certificate Issued to...	Cross-Certificate Stored in Directory for...
East01/SVR/WWCorp	USHub/SVR/Earth	WWCorp Domain
USHub/SVR/Earth	East01/SVR/WWCorp	Earth Domain

In this example, the USHub and East01 servers will authenticate successfully. Users who have access to these two servers can modify the same databases and send mail, even though they are not in the same organizations.

Cross-Certifying IDs

The following table lists the methods that administrators can use to cross-certify IDs.

Method	Description
Prior to connection	The administrator cross-certifies the IDs. IDs are sent via electronic mail or postal delivery service.
At the time of connection	The administrator cross-certifies on the first attempt to access the server in another organization.

Cross-certify both organizations

To complete cross-certification, an administrator in **each** organization must create a cross-certificate.

Documentation references

For more information on the methods for cross-certification, refer to the references in the following table.

Cross-certification method	Lotus Domino Administrator 6 Help Reference
Cross-certifying by electronic mail	Adding a Notes cross-certificate for IDs by Notes mail
Cross-certifying by disk media	Adding a Notes cross-certificate for IDs by postal service
Cross-certifying at the time of connection	Adding a Notes or Internet cross-certificate on demand

Cross-Certifying IDs...(continued)

Checklist: Creating a cross-certificate

The administrator in each organization must complete these tasks to create a cross-certificate.

	Task	Procedure
❑	1	Create and mail a safe copy of the ID file.
❑	2	Create the cross-certificate.

Task 1: Create and mail a safe copy of the ID file

A safe copy of an ID is a copy of the ID without the private and encryption keys. The safe copy contains only the user information, public key, and certificates. No password is required to access the ID; however, the ID cannot be used to authenticate within the Domino environment.

Follow these steps to create a safe copy of the ID to be cross-certified before sending it to the other organization's administrator.

Step	Action
1	Click the **Configuration** tab.
2	Choose **Tools→Certification→ID Properties**.
3	Select the ID file, and click **Open**.
4	Enter the ID password, and click **OK**.
5	Select the **Your Identity** section→**Your Certificates** panel.
6	Click **Other Actions**, and then choose **Export Notes ID (Safe Copy)**.
7	Enter a file name for the safe ID, and click **Save**.
8	Click **Close**.
9	Mail the safe copy of the ID to the other administrator.

Cross-Certifying IDs...(continued)

Task 2: Create the cross-certificate

Follow these steps to generate a cross-certificate issued by your organization to the other organization.

Step	Action
1	Click the **Configuration** tab.
2	Choose **Tools→Certification→Cross Certify**.
3	Click **Server**, enter or select a registration server name, and click **OK**.
4	Click **Certifier ID**, select the certifier ID file, and click **Open**.
5	Click **OK** to continue.
6	Enter the certifier password, and click **OK**.
7	Select the safe copy received from the other organization, and click **OK**.
8	From the **Subject name** drop-down box, select the level within the other organization's hierarchy at which to cross-certify.
9	Accept or change the cross-certificate expiration date.
10	Click **Cross Certify**.

Note: For successful authentication, the administrator in the other organization must complete this process to create a cross-certificate issued by the other organization to your organization.

Deleting a cross-certificate to prevent authentication

Delete the Cross-certificate document from the Domino Directory to prevent users and servers in the other organization from authenticating with that branch of your organization.

Certificates are cached, so restart the server to prevent authentication with the organization specified in the deleted Cross-certificate document.

As an additional precaution, deny access in your organization's Server documents to guarantee no access by the other organization.

For example, if Worldwide Corporation is no longer doing business with Earth Corporation, a Worldwide administrator should delete the Cross-certificate document, and add */Earth to the **Not access server** field on all servers in the domain.

Enable Cross-Organization Authentication Exercise

Classroom Scenario

Worldwide Corporation wants to share its customer database with its subsidiary, Earth Corporation.

Worldwide employees update customer information on the Worldwide server, East01. The database replicates to External01 for access by outside organizations.

Likewise, Earth employees update customer information on the Earth server, North01. The database replicates to ExHub01 for access by outside organizations.

Determine cross-certification levels

In the graphic below, circle the certifier, server or user level in each organization that should cross-certify with the other organization.

There are many possible cross-certification options. Choose the best option that provides the required access, but does not provide users or servers with unnecessary access to servers.
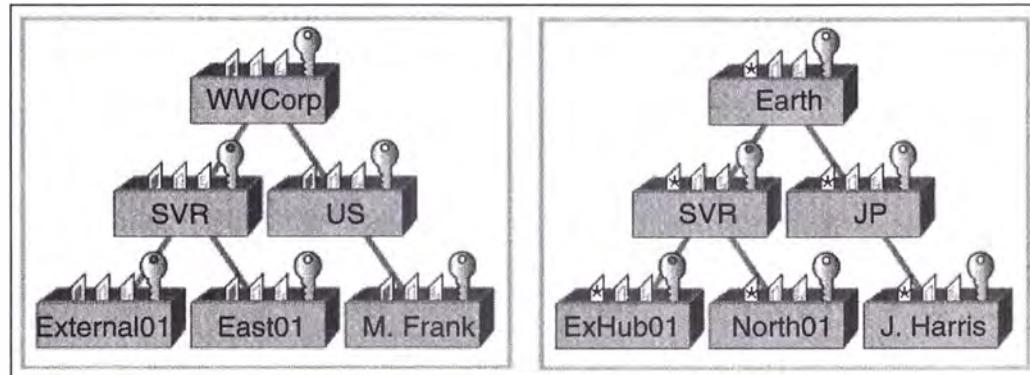
Complete the table to indicate the cross-certificates to create in order to enable the cross-organization communication you proposed in the graphic.

Cross-Certificate Issued by...	Cross-Certificate Issued to...	Cross-Certificate Stored in Directory for...

Allowing Server Access to Other Organizations

A cross-certificate permits a user or server in another organization to authenticate with a server in your organization, however, this does not guarantee that the server permits access to the user or server in the other organization. The server access fields in the Server document control access by the servers and users in the other organization.

Recommendations for access by other organizations

Cross-certifying with another organization allows for the other organization to authenticate with servers in your organization. It is important to correctly complete the server access fields in your organization's Server documents to permit access to the appropriate users or servers in the other organization. Likewise, it is important to prevent access to unauthorized users and servers in the other organization.

The following table suggests how to set the **Access server** field depending on the level at which cross-certification occurred.

Cross-certified with Other Organization's...	Set Access Server Field This Way...
O certifier	Branch of organization hierarchy, for example, */Earth
OU certifier	Branch of Organizational Unit hierarchy, for example, */US/Earth
Server	Server's name
User	User's name

Tip: If cross-certification is at the server level, administrators can add an extra layer of security as a precaution by adding the other organization's hierarchy to the **Not access server** field for all other servers in your organization.

Allowing Server Access to Other Organizations...*(continued)*

Worldwide Corporation will adhere to the following guidelines:

Classroom Scenario

- All Worldwide employees are permitted access to all regional servers.
- All regional servers are secured against access by employees of organizations with which Worldwide has cross-certified.
- Only the external server will allow access by employees of Earth Corporation.

Modify the server access fields

Follow these steps to implement the access described in the above scenario.

Step	Action
1	From **Domino Administrator**, click the **Configuration** tab→**Server** section→ **All Server Documents** view.
2	Select your assigned Server document.
3	Click **Edit Server**.
4	Click the **Security** tab.
5	In the **Server Access** section, complete the following fields: ■ **Access server**: Add `*/WWCorp` ■ **Not access server**: Add `*/Earth`
6	Click **Save & Close**.

Modifying database ACLs

For another organization's users or servers to gain access to a database in your organization, the following three security mechanisms must be set properly:

- The Cross-certificate document exists to permit the user or server in the other organization to authenticate.
- The server access fields in the Server document permit access to the server.
- The database ACLs permit access to the database.

If one of these three mechanisms is not set properly, the user or server from the other organization fails when accessing a database in your organization.

Finding Instances of a Server's Name

To locate instances of a particular server name in the domain, use the **Find server** tool on the **Server Analysis** tab. This is a useful tool when an administrator needs to move a server to a new location in the hierarchy or decommission a server.

How to find a server in a domain

The **Find Server** tool immediately creates an Administration Process Request to find the selected server name(s). The next time the Administration Process carries out new requests, it creates a document as a response to the original request. To start the search before the next Administration Process time interval, issue the following command from the **Server** tab→**Status** tab→**Server Console** view:

```
tell adminp process new
```

The resulting response document to the original Administration Request document contains document links and database links to the following occurrences of the name in:

- Domino Directory documents
- Group name(s) in Policy documents
- Database ACLs of all databases

Finding users or groups

Administrators can also use the Find tool to find users and groups. It is context sensitive and located on the Tools pane in Domino Administrator. It will find:

- Users, when the People view is selected
- Groups, when the Groups view is selected

Finding Instances of a Server's Name...(continued)

Worldwide Corporation administrators want to upgrade a server that keeps crashing. This server will have a different name. It is necessary to find all places where the old server is referenced.

**Classroom
Scenario**

Find your assigned server

A request to decommission a server is approved. Follow these steps to find all instances of the server in the current domain.

Step	Action
1	From **Domino Administrator**, select your assigned server to administer.
2	Click the **Server** tab→**Analysis** tab.
3	Choose **Tools→Analyze→Find Server**.
4	Select your assigned server from the list box, and click **OK**. **Result:** A message displays indicating that an administration request will be initiated to search the enterprise for the server name.
5	Click **Yes**. **Result:** A request is created in the Administration Requests database.
6	To replicate the changes to the Administration Requests database throughout the classroom domain, follow these steps: a. Click the **Server** tab→**Status** tab→**Server Console** view. b. Click the **Live** button. c. Enter the following text on the command line, and then click **Send**. `< Rep.txt`
7	To speed processing, follow these steps: a. Click the **Server** tab→**Status** tab→**Server Tasks** view. b. Right-click the **Admin Process** task, and then choose **Tell Task**. c. Select **New requests**, and click **OK**. **Result:** The Administration Process creates a Response document to the original Administration Process Request document, performs the search on the server, and then posts document links and directory links to each occurrence of the server name in the Response document.

Finding Instances of a Server's Name...(continued)

Find your assigned server...

Step	Action
8	Repeat Step 6 to replicate the changes to the Administration Requests database throughout the classroom domain.
9	Click the **Analysis** tab→**Administration Requests (R6)** section→ **All Requests by Name** view.
10	Expand the section for your assigned server.
11	Open the response to the document titled **Find Name in Domain**.
12	Click some of the database links, then view the database ACL to verify that your assigned server is listed in the ACL.

Placing a Server Out-of-Service

At times, administrators may find it necessary to place a server out-of-service. For example, a server's equipment has become outdated, and will be retired (decommissioned).

Decommission Server Analysis tool

Domino Administrator includes a tool to analyze the effect of decommissioning a server by comparing two servers:

- The server to decommission
- The target server to inherit new tasks

The Decommission Server Analysis tool stores the comparison in a **Results** database. The results database, Decommission Server Analysis, Decomsrv.nsf:

- Contains a separate document for each item compared
- Marks problems or inconsistencies to correct before decommissioning

Manual process to decommission the server

The Decommission Server Analysis tool does not automate the process of retiring the server; however, the tool aids this process by showing the places that need attention before the server is decommissioned. Decommissioning the server is a manual process.

Note: There are additional tasks required to decommission a Domain Search server. For more information, refer to the Lotus Domino Administrator 6 Help topic *Decommissioning a Domain Search server.*

Placing a Server Out-of-Service...(continued)

Analyzing the effect of decommissioning a server

Follow these steps to run a Decommission Server Analysis.

Step	Action
1	From Domino Administrator, click the **Server** tab→**Analysis** tab.
2	Choose **Tools→Analyze→Decommission Server**.
3	Select the Source Server and Target server.
4	To change the location or file name for the results database: a. Click **Results Database**. b. Select the Server to store the results database. c. Enter the Title and File Name for the results database. d. Click **OK**.
5	Select one of the following options: ▪ **Append to this database** ▪ **Overwrite this database**
6	Click **OK**.

Updating a Server ID

Each server ID contains, among other things, a password, the server's location within the hierarchy and a certificate expiration date. It may be necessary to update a server ID under the following circumstances:

- To change or remove the password
- To extend the certificate expiration date for the server

(Optional) Remove the server ID password

In order to store the server ID in the Domino Directory during server registration, the ID must be password-protected. However, it is often more convenient to not have a server ID password (for example, for remote server restart). Follow these steps to remove the password on the server ID.

Step	Action
1	Shutdown your assigned server to close the server ID file.
2	From **Domino Administrator**, click the **Configuration** tab.
3	Choose **Tools→Certification→ID Properties**.
4	Select the server ID file located in the **\Domino\Data** directory, and click **Open**.
5	Enter the server ID password, and click **OK**.
6	Click **Change Password**.
7	Enter the server ID password once again, and click **OK**.
8	Click **No Password**. **Note:** To change the password instead of removing the password, enter and confirm the new password.
9	If prompted, select **Yes** to the question **Confirm your choice for No Password?**.
10	Click **OK** when the password is successfully changed.
11	Click **OK** to close the **ID Properties** dialog box.
12	Start your assigned server.

Note: The **Restart server** console command does not prompt for a server ID password. However, shutting down the server, then starting the server does prompt for a server ID password.

Updating a Server ID... *(continued)*

Recertifying a server ID

Follow these steps to recertify a server ID.

Step	Action
1	From **Domino Administrator**, click the **Configuration** tab→ **Server** section→**All Server Documents** view.
2	Select the server(s) with IDs about to expire, then choose **Actions→Recertify Selected Servers**.
3	To specify a registration server, click **Server**, select the server, and click **OK**.
4	Select **Supply certifier ID and password**.
5	Click **Certifier ID**, select the certifier ID originally used to register the server, and click **Open**.
6	Click **OK** to continue.
7	Enter the certifier ID's password, and click **OK**.
8	In the **Renew Certificates In Selected Entries** dialog box, complete the following: ■ Enter a new date in the **New certificate expiration date** field. ■ (Optional) In **Only renew certificates that will expire before** field, enter a date to recertify only a subset of the selected servers, according to their current expiration date. ■ Select **Inspect each entry before submitting request**. Click **OK**.
9	Review the entry, then click **OK** to view the next entry until all entries are processed.
10	Click **OK** when notified of the number of entries processed. **Result:** A request to recertify the server is posted to the Administration Requests database for each server processed.

What happens during recertification?

The recertification process results in updating both of the following elements with new certificate information:

■ The server ID file
■ The Server document in the Domino Directory

Determining Administrators Access

The **Server** document includes settings to designate various levels of administrative access for different categories of administrators in the organization. For example, only a few people might have Administrator access, while other members of a team are designated as Database Administrators.

Administration levels

There are seven administration levels found on the **Security** tab→**Administrators** section. The three most commonly used administration levels are outlined in the following table.

Server Document Field	Description of Access
Database Administrators	Can perform the following tasks: ■ Specify the administration server for a database. ■ Create, compact, and delete databases. ■ Maintain full-text indexes, folder, database and directory links, and certain database options. ■ Issue any server console command. ■ Issue any OS command using the Domino Server Controller.
Administrators	Same access as Database Administrators, plus: ■ Track mail messages. ■ Use the Domino Web Administrator. ■ Create databases, replicas, and master templates. **Note:** When the HTTP server task starts, it adds any names in this field to the database ACL of the Domino Web Administrator database.
Full Access administrators	Same access as Administrators, plus: ■ Manager access to all databases on the server. ■ All programmability rights. ■ All passthru rights. ■ Access to the server even if not explicitly listed in the **Access server** field. **Notes:** ■ This level is similar to **root** level access on UNIX. ■ This level does not have access to encrypted data. ■ By default, this field is blank.

For more information on the other administration levels, refer to *Appendix D: Additional Reference Material.*

Determining Administrators Access...*(continued)*

Access to create databases on the server

The following table outlines the fields that control who can create Domino databases on the server found on the **Security** tab→**Administrators** section.

Server Access Field	Description
Create databases & templates	Those users and servers allowed to create databases and templates on this server. A blank field permits anyone to create databases and templates on this server.
Create new replicas	Those users and servers allowed to create replicas on this server. A blank field permits no one to create replicas on this server.

Best practices for access control

The following outlines considerations for setting access controls:

- Use groups to facilitate easier administration and maintenance.For example, use a server group in ACLs and server access fields. To permit access for a new server, simply add the new server to the Group document; thereby making it unnecessary to change database ACLs and server access fields.

- All servers storing replicas of a database should be included either in a group or individually in the ACL for proper replication. A server is typically granted Manager access to any database stored on that server.

- At least one person or group should be granted Manager access to every database stored on a server.

- The server and the administrator must have the ability to create databases, templates, and replicas when using the Administration Process to create the databases, templates, and replicas.

Set Administration Access Exercise

Classroom Scenario

Worldwide Corporation will adhere to the following guidelines:

- Use the Administration Process to create database replicas on each regional server.
- Doctor Notes has full access to administer all regional servers.
- Use of administrators groups is mandated:
  - Administrator groups: EastAdmins, WestAdmins
  - Server groups: EastServers, WestServers
- Regional administrators groups should be granted the following access:
  - **Administrators** access to servers within their region.
  - **Database Administrators** access to servers outside their region.
  - Create databases and replicas on servers within their region.

Determine access

Use the above mentioned *Classroom Scenario* and *Best practices for access control* section to answer the following questions for your assigned server:

1. Complete the following table with the required server access field values. Use the group names specified in the above scenario.

Server Access Field	New Value
Create databases & templates	
Create new replicas	
Full Access administrators	
Administrators	
Database Administrators	

2. What servers, users, or groups require Manager access to databases on each regional server?

Set Administration Access Exercise...*(continued)*

Allow access to your assigned server

Allow access to your assigned server by completing the following tasks:

■ Modify the server access fields for your assigned server as listed in the table in Question 1 on the previous page.

■ Restart your assigned server for the changes to take effect.

Test access

Test the changes just made to access controls by completing the following tasks:

1. Create a database on Hub. Use any template for the database. Include your initials in the database title and file name to distinguish it from other students' databases.

2. Modify the database ACL to grant your assigned server the appropriate access.

3. Create a replica of the database on your assigned server using one of the following methods:

   ■ **File→Replication→New Replica**

   ■ **Files** tab; **Tools→Database→Create Replica(s)**

4. Once everyone has restarted their servers, access a server in the other region from Domino Administrator.

5. For each tab in Domino Administrator, perform at least one task. The following table lists some examples.

Tab	Task
Server	Enter a console command
Files	Create a database or compact a database

6. Select another server in your region and repeat the tasks.
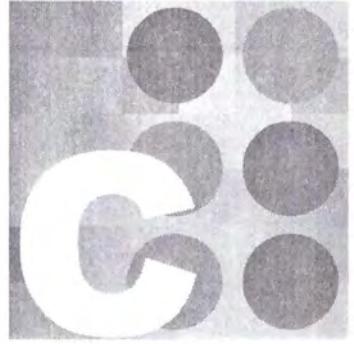
Monitoring Domino Servers

Lesson 5   Setting Up Server Monitoring

Lesson 6   Monitoring Server Performance
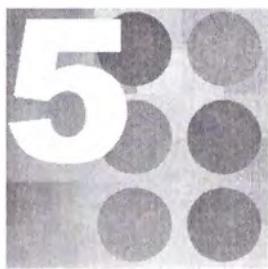
Setting Up Server Monitoring

One of the primary tasks of a Domino administrator is to monitor the health and status of servers in the Domino environment. Consistent, thorough monitoring helps administrators identify and address issues before they become a significant problem.

Objectives

After completing this lesson, you should be able to:

- ✓ Identify mechanisms for collecting server information.
- ✓ Start Statistic Collector task.
- ✓ Create event generators.
- ✓ Create event handlers.
- ✓ Enable agent logging.

Tasks, Statistics, and Events

Server tasks perform complex administration procedures — for example, compacting databases and updating indexes. All Domino server tasks generate information about the processes performed on the server.

Statistics and events

The Domino server provides services and tasks that create and report information about the Domino server. This information comes in two forms: statistics and events.

Component	Description
Statistic	A numerical fact that shows what is happening on the server. The Domino server continuously updates statistics and stores them in memory. Example: **Free space on drive C** indicates the amount of free space available on drive C.
Event	Generated when something takes place on the server. Events happen continuously on the Domino system. An action or occurrence to which an application responds. Actions are any of the following: ■ User-generated, for example, a mouse click ■ System-generated, for example, elapsing of a set amount of time ■ Application-generated, for example, autosave of a document

Monitoring tasks

There are two monitoring tasks running on a server. The tasks are:

■ **Statistic Collector:** Collects statistics and puts the information into the Monitoring Results database (StatRep.nsf) on the domain Administration server.By default, the Statistic Collector task collects statistics only from the server that has the Statistic Collector task running. To collect statistics from a list of specified servers, use the Server Statistic Collection document.

■ **Event:** Collects information about system activities and stores it in the Monitoring Results database (StatRep.nsf).

Server Monitoring Databases and Templates

Statistics and events are stored in databases on the system. Server monitoring databases are created either automatically when a task is run or manually by the administrator.

Database and template definitions

The following table lists databases that keep a running log of events and statistic information on a Domino 6 server.

Database/Template	Populated by	Contains	Check
Monitoring Configuration (Events4.nsf/Events4.ntf)	Event task	■ Messages ■ Monitors	Daily
Monitoring Results (StatRep.nsf/StatRep.ntf)	■ Statistic Collector task ■ Event task	■ Results of statistics ■ Events ■ Alarms	Daily
Domino Server Log (Log.nsf/Log.ntf)	System activity	Keeps track of all server activity	Often to ensure system is running properly
Domino Web Server Log (DomLog.nsf/DomLog.ntf)	Web activity	Web-specific events	Daily

Starting the Statistic Collector Task

The **Statistic Collector task** collects and monitors statistics from the server(s) configured in the Server Statistic Collection document.

The **Monitoring Results database** (StatRep.nsf) is a repository for Domino system statistics created when the Statistic Collector (Collect) or Events (Event) task is loaded for the first time.

Worldwide Corporation management wants statistics monitored now that the infrastructure is in place. To begin monitoring, the Statistic Collector task must be running.

**Classroom
Scenario**

Verify that the Statistic Collector task is running

Follow these steps to verify if the Statistic Collector task is running.

Step	Action
1	Click the **Server** tab→**Status** tab→**Server Tasks** view.
2	Verify the Statistic Collector task is running.

Start the Statistic Collector task

If the Statistic Collector task is not running, follow these steps to start the Statistic Collector task.

Step	Action
1	Choose **Tools→Task→Start**.
2	In the **Start New Task** box, select **Statistic Collector**.
3	Click **Start Task**.
4	Click **Done**.
5	Click the **Files** tab. Verify that the Monitoring Results database (StatRep.nsf) exists.

Event Generators

Event generators gather information by monitoring a task or a statistic or by probing a server for access or connectivity. Each event generator has a specified threshold or condition, which, when met, causes an event to be created. The event is passed to the Event Monitor task, which checks whether an associated event handler has been defined. If an event handler has not been defined, the Event Monitor task does nothing. If an event handler has been defined, the Event Monitor carries out the instructions in the event handler.

Event Generators

The Domino Administrator includes a set of default event generators, which are listed in the Event Generators view of the Monitoring Configuration database (Events4.nsf). The following table describes the default Event Generators.

Event Generator	Function
Database	Monitors: ■ Database activity and free space ■ Frequency and success of database replication ■ Database ACL changes, including those changes made by replication or an API program
Domino Server Response	Checks connectivity and port status of designated servers in the network
Mail Routing	Tests and gathers statistics on mail routes by sending a mail-trace message to the mail server of the individual specified
Task Status	Monitors the events generated by the Domino server and its add-in tasks
Statistic	Monitors a specific Domino or platform statistic
TCP Server	■ Verifies the availability of the Internet ports (TCP services) on servers ■ Checks whether the server is responding on a given port ■ Generates a statistic that indicates the amount of time it took to verify that the server is responding on the specified port

Event Generators...(continued)

Event severity levels

The following table lists the event security levels.

Severity Level	Description
Fatal	Imminent system crash
Failure	Severe failure that does not cause a system crash
Warning (high)	Loss of function requiring intervention
Warning (low)	Performance degradation
Normal	Status messages

Creating an Event Generator

Classroom Scenario

Worldwide Corporation has grown rapidly in the past year. Disk space has been running low due to the increase in personnel. There are new disks on order, but until they arrive, the administrators want to track disk usage to avoid problems.

The administrators need to create a statistic event generator to notify an alarm when the server disk space goes below a certain percentage.

Monitor disk space

Follow these steps to create a new statistic event generator.

Step	Action
1	Click the **Configuration** tab→**Monitoring Configuration** section→**Event Generator** section→**Statistic** view.
2	Click **New Statistic Event Generator**.
3	On the **Basics** tab, enter the following information: **Server(s) to monitor** ■ Select **Only the following** ■ Enter *<your server name>* For example: East01/SVR/WWCorp **Statistic to monitor** ■ Statistic to monitor: *<Domino system disk>* For example: Disk.C.Free ■ Select **Monitor as percent of the whole**.
4	Click the **Threshold** tab.
5	In the **Generate the event when the statistic falls below this percentage ____ of the total** field, enter 95%.
6	Click **Save & Close.**

Event Handlers

A monitor sets a threshold on a statistic. To be notified when the threshold is reached, create an event handler. An **event handler** defines when and how messages are sent when the threshold is reached.

For example, if you create an ACL monitor, you are notified when an ACL is changed.

Note: Event handlers can also be created for events when certain levels of severity are met.

Event handler notification options

The following table lists event handler notification options.

Notification	Description
Broadcast	Reports the event to all users logged on to the server or to a specified group of users.
Log to database	Logs the event to a database, typically StatRep.nsf, on a local server. Select this method only if the specified server is reporting events to its own collection database.
Mail	Mails the event to a person or to a mail-in database (typically StatRep.nsf) on a server in a different domain or one that uses an incompatible mail protocol.
NTLog	Reports the event to the Windows NT Event Viewer.
Pager	Uses the mail address of an alphanumeric pager to report a modified version of an event to a pager.
Prog	Runs an add-in program or specified command to correct problems automatically.
Relay	Relays the event to another server that is in the same Domino domain and that runs a common protocol. These events are collected in a database, typically StatRep.nsf.
Sound	Sounds an alarm on the designated server when the event occurs.
SNMP Trap	Sends the event as an SNMP trap. Select this method only if the specified server is running the Event Interceptor task and the Domino SNMP Agent.
UNIXLog	Reports the event to the UNIX system log.

Creating an Event Handler

Classroom Scenario

Administrators at Worldwide Corporation set a monitor to check disk space. They want Domino to notify them when disk space falls below the specified level so that they can act on it before it becomes a problem for users.

The administrators want to use the event wizard to create an event handler to send them mail when the disk space reaches the specified level.

Notify by mail

Follow these steps to create an event handler to notify by mail when free disk space is below a critical point.

Step	Action
1	Click the **Configuration** tab→**Monitoring Configuration** section→ **Event Handlers**→**All** view.
2	From the menu bar, choose **Actions** menu→**Setup Wizards**→ **Event Notification**. **Result:** The Generate Event Handler wizard dialog box displays.
3	Click **Next**.
4	Select the following options and then click **Next**: ■ **What should trigger the handler? Any event that matches my criteria** ■ **What servers can trigger the notification? Only these servers:** *<your server name>* ■ **Event Criteria Match - Event Type: Events must be one of these types:** `Statistic` ■ **Event Criteria Match - Event Severity: Events must be one of these severities:** `Warning (high)` ■ **Event Criteria Match - Event Message: Event messages must have this text in them:** `Free space`
5	Review event handler criteria and then click **Next**.
6	Select the following options and then click **Next** (after each one): ■ **By what method do you want the notification generated?** `Mail` ■ **What email address(es) do you want this sent to?** `Your email address`
7	Click **Finish**.

Agents

An **agent** is a program that performs a series of automated tasks according to:

- A set schedule
- A direct request by a user
- An occurrence of an event

Agents can be shared or private:

- **Shared** agents are agents created by one user and can be run by other users or scheduled to run on the server.
- **Private** agents are agents that users create for themselves. Users cannot run another user's private agent. Private agents are stored on the machine where the agent is created.

When the agent runs

The following table describes design options for when the agent runs.

Agents Can Run...	Example
Manually	By the user via the **Actions** menu in the Notes client
When triggered by an event	If documents have been created or modified
According to a schedule	Every day at 1:00 AM

Agents... *(continued)*

Agent events

The following table describes the events that can trigger an agent and examples of when to use them.

Event	Use it to...
Before new mail arrives	Delete unwanted mail before mail is deposited in the mail database.
After new mail arrives	Forward mail to another address while a user is on vacation.
After documents are created or modified	Update new or existing documents to change an area code for phone numbers.
When documents are pasted	Add the current date to the document when copied documents are pasted into the database.

Enabling agent logging

Follow these steps to enable agent logging.

Step	Action
1	Click the **Configuration** tab→**Server** section→**Configurations** view.
2	Open an existing document or click **Add Configuration**.
3	Click the **NOTES.INI Settings** tab.
4	Click **Set/Modify Parameters**.
5	Complete the following fields: ■ **Item:** Select `Log_AgentManager`, and click **OK**. ■ **Value:** Enter `1`, and click **Add**.
6	Click **OK**.
7	Click **Save & Close**.

Agents...(continued)

Check agent status

Follow these steps to check the current status of the agent. Complete the information in the **Result** section.

Step	Action
1	Click the **Server** tab→**Statistics** tab.
2	Click **Agent**→**Daily**. **Result:** ■ Any access denials? ■ Any unsuccessful runs?
3	Select **Agent**→**Hourly**. **Result:** ■ Any access denials? ■ Any unsuccessful runs?

What is the Agent Manager?

The **Agent Manager** task controls when an agent runs on a server. Every time an agent runs, it uses server resources. Settings in the Server document and in the Notes.ini file control when scheduled and event-triggered agents run.

Agents...(continued)

Notes.ini setting: Log_AgentManager

Log_AgentManager specifies whether or not agent execution information is recorded in the log file and displayed on the server console. The syntax is:

```
Log_AgentManager = value
```

Valid values are:

- 0 - Do not log agent execution events
- 1 - Log partial and successfully completed agent execution events
- 2 - Log only successfully completed agent execution events

Agent Manager best practices

The following are recommendations when using the Agent Manager.

Security

- Restrict who can run an agent.
- Personal agents can only be run by their creator. The ability for an individual to run personal agents on the server can also be restricted by the Security tab of the Server document.
- Sign agents with a generic ID rather than an individual's ID.
- Add the generic ID name to a new group in the Domino Directory. Then add this group to all the database ACLs that use the agent signed by this generic ID.
- Grant ability to **run unrestricted methods and operations** to highly trusted developers only.

Mail agents

- Use the separate mail agent execution time-out in the Configuration Settings document; the **Router SMTP** tab→**Restrictions and Controls** tab→ **Delivery Controls** tab.
- Overuse of Mail Pre-Delivery agents can cause performance problems.
- Mail Pre-Delivery agents cannot call other agents.

General

- When setting agent time limits, do not use 0 unless you do not want to limit agent run times.
- Stagger scheduling of agents to improve performance and throughput.

Determine Server Status Exercise

The log file lists all events that have occurred since each server started.

Each Event document shows:

- The server that originated the event
- The time the event occurred
- The event severity level
- The type of event
- The error code
- A brief description of the event

The Monitoring Results database collects system statistics.

Identify status

Worldwide Corporation wants to check server status to make sure things are running smoothly. Specifically, they want to know:

1. Are there any databases not replicating? If so, where would you find information on what databases did not replicate?

    How many successful replications have there been?

2. Is there any mail waiting to be routed on Hub?

    If so, what might be the reason?
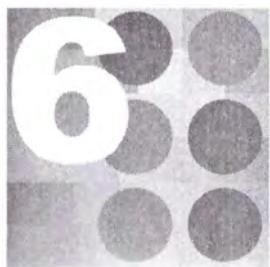
Monitoring Server Performance

There are multiple tools available to monitor server resources and statistics. This lesson introduces the following tools:

- Server Monitor
- Domino Web Administrator
- Domino Console

Objectives

After completing this lesson, you should be able to:

- ✓ View statistics using the Server Monitor.
- ✓ Use the Domino Web Administrator to monitor servers.
- ✓ Issue commands in the Domino Console.

Viewing Statistics

Statistic collection starts when an administrator does the following:

- Start Domino server monitoring
- Chart real-time statistics
- Access the Server - Statistic tab

The Statistic Collector task continually gathers events and statistics from the servers monitored via these actions and stores them in the Monitoring Results database.

View statistic information in the Monitoring Results database

Follow these steps to view information in Monitoring Results (StatRep.nsf). Complete the information in the **Result** section.

Step	Action
1	Click the **Server** tab→**Analysis** tab→**Monitoring Results** section→ **Events** section→**All** view.
2	Open the most recent report.
3	Select **Statistics Report** section→**Systems** view. **Result:** ■ What is the severity? ■ What is the Event text? ■ List anything in red with a value above zero.

Viewing Statistics...(continued)

View real-time statistics

There are several ways to view statistics, such as real-time or graphic views.

Follow these steps to view real-time statistics. Answer the question in the **Result** section.

Step	Action
1	Click the **Server** tab→**Statistics** tab. **Note:** Loading the statistics may take a few seconds.
2	Select **Disk→C (Domino system disk)**. **Result:** How much free space is available (in MB)?

Using the Server Monitor

The **Server Monitor** provides a visual representation of the status and availability of selected Domino servers, tasks, real-time system statistics, and status indicators. The Administration Preferences control the default behavior of the Server Monitor.

Views

The following table lists the Server Monitor views.

View	Displays...
By State	A detailed status of Domino servers and the associated tasks and statistics.
By Timeline	Historic information about server status that allows quick determination of which tasks are having problems and when the problems occurred. Information can be displayed in time intervals of 1 to 60 minutes.

Default tasks and statistics

The following table lists the tasks and statistics displayed by the Server Monitor.

Tasks	Statistics
Admin Process	Server.Users
Agent Manager	Mail.Dead
Database Server	Mail.Hold
Event Monitor	Mail.Waiting
Indexer	Server.AvailabilityIndex
Replicator	Server.ElapsedTime
Router	
Stats	

Using the Server Monitor...(continued)

Monitor servers

In the graphic below, the administrator is monitoring five servers. The following table lists the status of each server.

Server	Flag
East01/SRV/WWCorp	Running.
Hub/WWCorp	■ Failure (!): The Administration Process is not running. ■ Warning (?): The Agent Manager has a warning flag.
North01/WWCorp	Running.
South01/WWCorp	Running.
West01/SRV/WWCorp	Running.
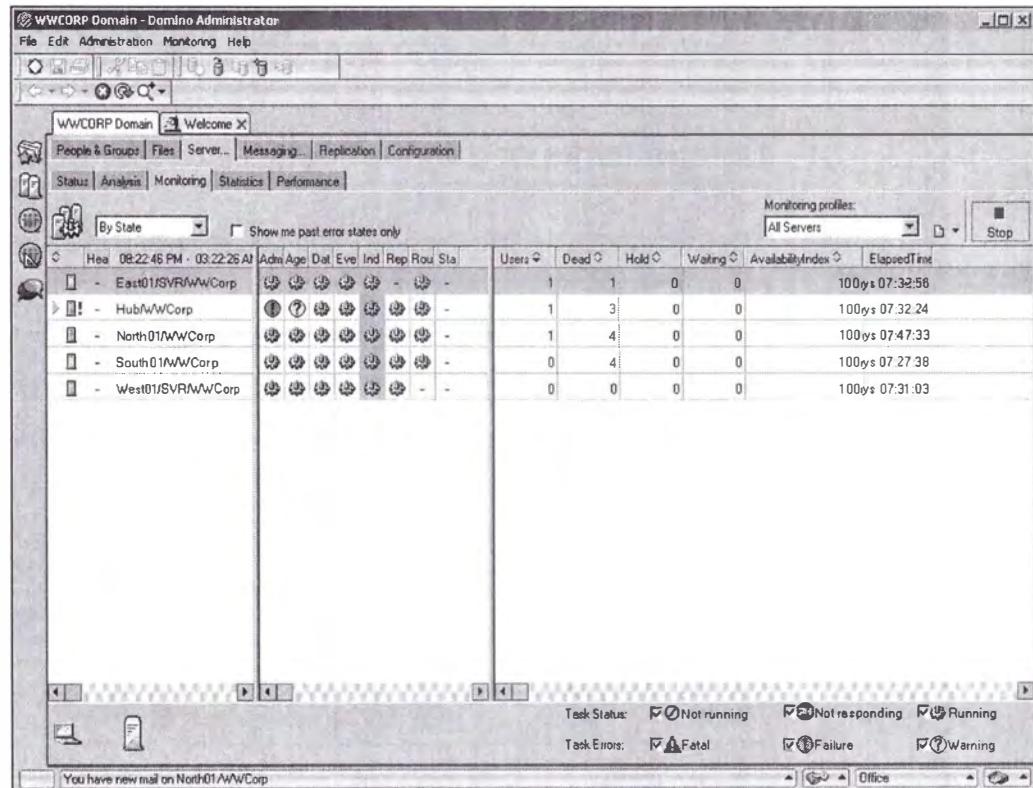
Using the Server Monitor...(continued)

View statistics

Follow these steps to view statistics. Complete the information in the **Result** section.

Step	Action
1	From the menu, choose **File→Preferences→Administration Preferences**.
2	Click **Monitoring**.
3	Select **From this computer**.
4	Select **Automatically monitor servers at startup**. Click **OK**.
5	Click the **Server** tab→**Monitoring** tab.
6	Choose the **By State** view.
7	Click **Start**. **Result:** Wait for at least 2 minutes. Are there any tasks that are not running normally? Describe.

Monitor free disk space

To monitor free disk space from the Server Monitor, add a statistic.

Follow these steps to monitor free disk space. Complete the information in the **Result** section.

Step	Action
1	From the menu, choose **Monitoring→Monitor New Statistic**.
2	Select **Disk→(C)→Free**. Click **OK**.
3	After the display updates, record the value for free disk space. **Result:** Is this the same value you obtained from the Statistics tab in the *View real-time statistics* guided practice earlier in this lesson?

Using the Domino Web Administrator

The Domino 6 Web Administrator provides administrators with the majority of features available through the Domino Administrator — such as viewing and monitoring information about servers and users, statistics collection, changing database ACLs, event handler, and using the remote server console.

Benefits of using the Web Administrator

The Web Administrator supports role-based permissions so senior Domino administrators can delegate administrative tasks to other administrators who may not have access to the Domino Administrator client.

The Web Administrator uses the Web Administrator database (WebAdmin.nsf). The first time the HTTP task starts on a Web server, Domino automatically creates this database in the Domino data directory. Domino assigns a unique replica ID to the database; therefore, the Web Administrator database does not replicate between servers.

Monitor with the Domino Web Administrator

Follow these steps to monitor a server with the Domino Web Administrator.

Step	Action
1	Open Internet Explorer (version 5.5 or above).
2	Enter the URL address for the Web Administrator. For example: `http://dominoserver.domainname.com/webadmin.nsf.` where `dominoserver.domainname` is the server and domain name for your Domino server, for example, `hub.wwcorp.com`.
3	Enter your Domino server administrator name and Internet password, and click **OK**. ■ What information is given about your server?
4	Select **Server→Status→HTTP Statistics**. ■ What type of information is here?
5	After exploring for a few minutes, **Logout**.

Using the Domino Console

The Domino Console provides a server console on any platform that supports Java, allowing an administrator to enter commands in the traditional text-based manner or from menus.

Advantages of the Domino Console

The Domino Console offers the following advantages to an administrator:

- Platform-independent control of server using Java-based UI
- Remote startup and shutdown of the Domino server
- Menu options for console commands
- Commands for groups of servers and operating system shell
- Connection to various servers in various organizations:
  - Switch servers with one click
  - Authenticate with Internet password only
- Logging of console messages to a text file

Domino Console components

The two main components of the Domino Console are described in the following table.

Component	Function	Runs on
Controller	Listens for commands	Domino server
Console	The user interface	Any machine connected to the server

Using the Domino Console...(continued)

Console and Controller commands

The following table lists the commands that allow administrators to control how many processes are running on the same machine at the same time.

Command	Starts the Following Components...
nserver -jc	Console, Domino, and Controller
nserver -jc -c	Domino and Controller
nserver -jc -s	Console and Controller
nserver -jc -c -s	Controller only

Start the Controller

Follow these steps to start the Controller on the Domino server system.

Step	Action
1	Ensure that the Domino server is not running on your machine.
2	From the Windows desktop, choose **Start→Run**.
3	Enter <path>\nserver -jc -c -s, and click **OK**. Where <path> is replaced by the path to the Domino program directory. **Result:** The Domino controller displays.

Start the Domino Console

Follow these steps to start the Domino Console.

Step	Action
1	From the Windows desktop, choose **Start→Run**.
2	Enter <path>\jconsole, and click **OK**. Where <path> is replaced by the path to either: ■ The Domino program directory ■ The Notes program directory **Result:** The Domino Console displays.

Using the Domino Console...*(continued)*

Connect to the server through the Controller

Follow these steps to connect to the server.

Step	Action
1	From the Domino Console, choose **File→Open Server**.
2	For **User Name** and **Password**, enter your administrator name and Internet password.
3	Enter (or select) the server.
4	Click **OK**.
5	After connecting to the controller, choose **File→Refresh Server List**.
6	Open the server bookmark, and view **All Servers**.
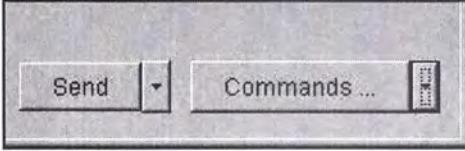
Issuing Commands in Domino Console

Administrators can use the Domino Console, a Java-based console, to send commands to the Domino Controller. The Domino Console does not require a Notes ID, only a Domino Internet name and password, so administrators can connect to servers in different organization hierarchies without having multiple Notes IDs or cross-certificates.
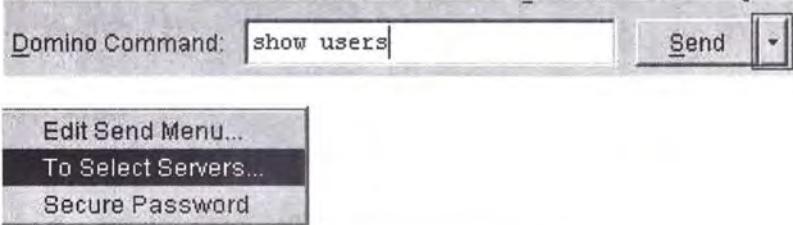
Issue commands

Follow these steps to add and issue a custom command.

Step	Action
1	In the **Domino Console**, choose **File→Show→Users**. **Result:** The list of users displays.
2	Choose **Edit→Custom Commands**.
3	Enter the following command: `load updall -v`
4	Click **Add**, and then click **Save**.
5	Click the triangle next to **Commands**.
6	Select the **shell dir** command.
7	Click **Send**. **Result:** The custom command displays a file listing.

Issuing Commands in Domino Console...(continued)

Send a command to multiple servers

Follow these steps to send a command to two servers.

Step	Action
1	In the **Domino Command** field, enter show users, but do not click Send.
2	Click the **triangle** next to Send, and select **To Select Servers**. Domino Command: show users Send ▾ Edit Send Menu... To Select Servers... Secure Password
3	Select your server, and click **Add**.
4	Select a different server, and click **Add**.
5	Click **Send**.

Note: The Domino Console also allows saving a group of servers and sending a command to the group as needed.

Issuing Commands in Domino Console...(continued)

Automate periodic commands

Follow these steps to schedule commands to run periodically.

Step	Action
1	Choose **Edit→Periodic commands**.
2	Click **Add Command**.
3	Click under **Server**, and select your server.
4	Press the **right arrow** key
5	Enter the following command: `show stat mail`
6	Press the **right arrow** key twice.
7	Select **Enable**.
8	Click **Save Command**.

Exit the Domino Console

Follow these steps to exit the Domino Console and start the traditional server console.

Step	Action
1	Choose **File→Exit**.
2	Select the checkbox labeled **Also stop Server Controller and Server**. **Note:** This checkbox is only enabled if the Domino Console is running on the server machine. If this is a remote session, it will be disabled.
3	Click **Yes**.
4	Restart the Domino server.
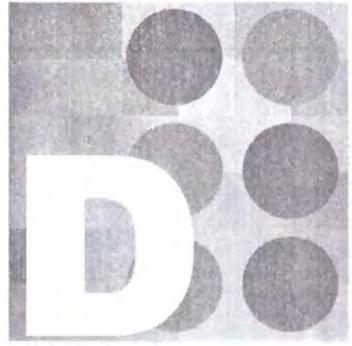
Troubleshooting the Domino Environment

Lesson 7 Resolving Server Problems

Lesson 8 Resolving User Problems
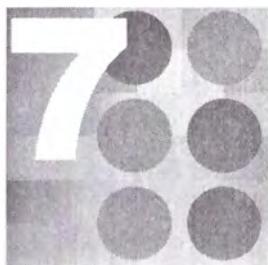
Resolving Server Problems

When a Domino server is not functioning as expected, administrators have several resources at their disposal to troubleshoot problems. This lesson includes references to those resources as well as possible solutions to common server problems.

Objectives

After completing this lesson, you should be able to:

✓ Use troubleshooting tools in Domino Administrator server console.

✓ Solve server access issues.

✓ Solve Administration Process issues.

✓ Solve agent issues.

✓ Troubleshoot replication problems.

✓ Recover from a server crash.

Troubleshooting Using the Domino Administrator Server Console

The Server Console view in Domino Administrator includes the following tools to help troubleshoot problems:

- A stop trigger to pause the server console when a specified error occurs
- Lookup error messages including possible causes and resolutions
- An event handler to be notified when errors occur

Set a stop trigger

Administrators can configure the server console to stop (pause) the console display when a particular event occurs—typically an error message. Follow these steps to set a stop trigger.

Step	Action
1	Click the **Server** tab→**Status** tab→**Server Console** view.
2	Click **Live**.
3	Enter the following command to generate a replication error message: `rep earthtest/wwcorp names.nsf` Click **Send**.
4	Once the replication error occurs, click **Pause**.
5	Select the error resulting from the server being unable to find Earthtest/ WWCorp, right-click, and choose **Set Watch**.
6	Click **OK** on the message box stating **The server console will pause on the next occurrence, plus ten lines, of this error**.
7	Click **Resume**.
8	Repeat the replication command in Step 3. **Hint:** Select the original command from the **Domino Command** list box.
9	Enter the `Show Tasks` command, and then click **Send**. **Result:** The server console display pauses on the replication error.
10	Click **Resume** to restart server console display.

Troubleshooting Using the Domino Administrator Server Console...*(continued)*

Look up error messages at the server console

Administrators can look up standard error messages that display on the server console without using Lotus Domino Administrator 6 Help. Follow these steps to look up an error message at the server console.

Step	Action
1	From the **Live Server Console** view, click **Pause**.
2	Select the replication error generated in the *Set a stop trigger* guided practice.
3	Right-click, and choose **Lookup Error**. **Result:** A **Server and Addin Task Event** document opens.
4	Read the information on each tab (**Basics** and **Advanced**), then click **Cancel** to close the document.
5	Click **Resume** to restart server console display.

Cancel a stop trigger

After fixing the problem, follow these steps to cancel the stop trigger.

Step	Action
1	From the **Live Server Console** view, click **Pause**.
2	Select the replication error message generated during the *Set a stop trigger* guided practice.
3	Right-click, and choose **Reset Watch**.
4	Click **OK** on the message box stating **The server console will no longer pause on the next occurrence of this error**.
5	Click **Resume**.

Note: Administrators can configure notification when a particular event occurs. With the server console paused, select the event, right-click, and choose **Create Local Event Handler**. Complete the form as seen previously in *Lesson 5: Setting Up Server Monitoring*.

Solving Server Access Problems

Administrators need to solve server access problems when a user (or server) is not able to authenticate with a destination server, or not authorized to access a destination server. These problems can occur when:

- A user is attempting to access a server from a Notes client or Web browser.
- A server is attempting to access a server to:
  - Route mail or replicate databases.
  - Perform a task such as creating a replica database on another server.

Common server access problems

The following table lists the most common server access errors.

Error Message	Possible Cause	Possible Resolution
Server Error: The server's Domino Directory does not contain any cross certificates capable of authenticating you	The user (or server) does not hold a certificate in common with the destination server.	■ Verify the certificates held by the user (or server) trying to access the destination server. ■ Set up bi-directional cross-certification between the user (or server) and the destination server.

Server Error: You are not authorized to use the server	The access lists in the Server document are preventing the user (or server) from being granted access to the destination server.	■ Make the appropriate modifications to the Server document, **Security** Tab:
		  ■ Remove the user (or server) from the **Not access server** field.
		  ■ Add the user (or server) to the **Access server** field.
		■ Verify other fields in the **Administrators**, **Security Settings,** and **Server Access** sections on the **Security** tab.

Solving Server Access Problems...*(continued)*

Additional resources

Use any of the following additional resources:

■ View the Domino Server Log (Log.nsf) for error messages and problems.

■ Refer to the following topics in Lotus Domino Administrator 6 Help:

    ■ *Checking the Domino Directory for errors that affect server access*

    ■ *Checking the server ID for a problem that affects server access*

■ Lookup any error messages on the Lotus Support Services Web site at http://www-3.ibm.com/software/lotus/support/.

Classroom Scenario	Customers from Universe Corporation receive the following error message when they attempt to open the Product Ideas database on the Hub/SVR/WWCorp server:

"Server Error: The server's Domino Directory does not contain any cross certificates capable of authenticating you"

Solving Administration Process Problems

The Administration Process performs complicated tasks that may require several tasks to be performed in exactly the right order, some of which require administrator intervention.

Common Administration Process problems

The following table lists the most common problems when troubleshooting the Administration Process.

Problem	Possible Cause/resolution
User, administrator, or server is not authorized to perform the requested operation.	Verify that the user, administrator, or server has the proper privileges to perform the operation manually including at least Author with Create documents access to the Administration Requests database. A server needs the same access that an administrator needs.
A request has not been carried out.	Check the following views for any requests that require administrator intervention: ■ Pending Administrator Approval ■ Name Move Requests ■ CA Modification Requests or CA Recovery Updates
Requests are carried out on the Administration Server for the Domino Directory, but not on other servers in the domain.	Replicate the Domino Directory and Administration Requests database with all servers in the domain on a regularly scheduled basis.
Requests are taking hours and sometimes days to be carried out.	Configure the Administration Process intervals in the **Server** document→**Server Tasks** tab→ **Administration Process** tab. Look up the request title in Lotus Domino Administrator 6 Help to see when the request should be carried out. Some requests are carried out daily or weekly.
Changes to user and group names are not propagating to some databases.	Verify that the database ACL has an Administration Server and correct action specified (**Modify all Readers and Authors fields** or **Modify all Names fields**).

Solving Administration Process Problems...*(continued)*

Common Administration Process problems...

Problem	Possible Cause/resolution
Requests are processing in the initiating domain, but not in other domains.	Verify that Cross-domain Configuration documents are correct. If cross-certification is necessary to access the other domain's servers, verify that the Cross-certificate documents exist for both organizations.
User name change requests are not processing.	■ Verify that the Certification Log database (CertLog.nsf) exists and that the requestor has at least **Author** with **Create documents** access. ■ The request is not intended to be carried out immediately. Some requests are carried out based on an interval, daily or weekly. ■ A request requires administrator intervention. ■ The request was approved using the wrong certifier.

Additional resources

Use any of the following additional resources:

- Check the following views in the Administration Requests database for possible reasons the request failed:
    - All Errors by Date
    - All Errors by Server

- Refer to the following topics in Lotus Domino Administrator 6 Help:
    - *Administration Process -- Problems and error messages*
    - *How to troubleshoot the Administration Process*
    - *Administration request messages*

- Lookup any error messages on the Lotus Support Services Web Site at http://www-3.ibm.com/software/lotus/support/.

Reviewing the classroom scenario

Classroom Scenario

Administrators are unable to use the Administration Process to create a replica on the Hub server. They do not receive any error message when they initiate the request, however, the replica is not created.

Solving Connection Problems

There are numerous causes for two servers being unable to connect, many of which are network-specific. These problems can occur when a server is attempting to access another server for the purposes of mail routing or replication. More detailed troubleshooting steps for various network protocols can be found in Lotus Domino Administrator 6 Help.

Common connection error messages

The following list contains common error messages that are reported at the server console when two servers fail to connect:

■ Unable to find path to server

■ The server is not responding

■ The remote server is not a known TCP/IP host

■ Connection denied: The server you connected to has a different name from the one requested

Troubleshooting tips for resolving connection problems

After verifying that both servers are running, perform the following tasks:

■ Verify that both servers' IP addresses are correct in DNS or hosts files.

■ Clear the server's cache by restarting the server.

■ Use the `trace servername` or `trace portname!!!servername` console command to trace the network path to the other server.

■ If recent changes to a server include host name, IP address, or port names, it may be necessary to clear some system fields in the Server document. Refer to the following technotes on the Lotus Support Services Web site:

■ *How to Disable Server Cache of the Last Known Address*

■ *Where are Server Addresses Cached in Notes and Domino?*

■ Verify that the following fields are correct in both Server documents.

Tab	Field Name
Basics	■ Server name ■ Fully qualified Internet host name
Ports	■ Port is Enabled ■ Net Address

Solving Connection Problems...(continued)

Troubleshooting tips for resolving connection problems...

■ Verify that the following fields are correct in the Connection document used by the two servers attempting to connect.:

Tab	Field Name
Basics	■ Source and Destination server ■ Source and Destination domain ■ Use the port(s) ■ Connection type ■ Optional network address

Additional resources

Use any of the following additional resources:

■ View the Domino Server Log (Log.nsf) for error messages and problems.

■ Refer to the following documents in Lotus Domino Administrator 6 Help:

  ■ *Modems and remote connections -- Troubleshooting*

  ■ *Network connections over NRPC -- Troubleshooting*

  ■ *Network dialup connections -- Troubleshooting*

■ From the Lotus Developer Domain Sandbox Web site at http://www-10.lotus.com/ldd/sandbox.nsf:

  ■ Download the Notes Connect diagnostic tool, NPing.exe, or the Java-based diagnostic tool, JPing.exe.

  ■ Refer to the LDD Today article titled *Testing TCP/IP connection with NotesCONNECT*.

■ Look up any error messages on the Lotus Support Services Web site at http://www-3.ibm.com/software/lotus/support/.

Reviewing the classroom scenario

Classroom Scenario

The Hub server is unable to connect to the East01 server to replicate during off hours. The server console on Hub displays an "Unable to find path to server" error message. The administrators have already tested the following:

■ Restarted both servers.

■ Users can access both servers.

■ Trace east01 from Hub's console successfully connects to East01.

■ The IP addresses for both servers are correct in DNS.

Solving Agent Manager Problems

The Agent Manager controls the execution of private and shared agents on the server. Since running agents uses server resources, administrators can place tight controls on who can run agents on the server.

Common Agent Manager problems

The following table contains the most common Agent Manager problems.

Problem	Server Document Fields to Edit
User has insufficient access to run LotusScript, JavaScript, or Java agents.	**Security** tab→**Programmability Restrictions** section
User or server who signed the agent does not have access to run the agent on the server.	
User cannot run agents written using Simple actions or the formula language on the server.	
Time limit is preventing agents from finishing.	**Server Tasks** tab→**Agent Manager** tab→**Daytime Parameters** and **Nighttime Parameters** sections

Solving Agent Manager Problems...(continued)

Additional resources

Use any of the following additional resources:

■ Set the Notes.ini file setting (Log_AgentManager=1), then view the Domino Server Log (Log.nsf) for error messages and problems.

■ View the Agent log for a particular agent.

■ Refer to the following topics in Lotus Domino Administrator 6 Help:

  ■ *Tools for troubleshooting Agent Manager and agents*

  ■ *Agent manager and agents -- Problems and error messages*

■ Refer to the Lotus Domino Designer 6 Help topic *Security for agents on servers and the Web*.

■ Lookup any error messages on the Lotus Support Services Web site at http://www-3.ibm.com/software/lotus/support/.

Reviewing the classroom scenario

Users whose mail server is Hub/SVR/WWCorp cannot run the Out-of-Office agent.

Classroom Scenario

Solving Replication Problems

The Replicator synchronizes databases on two Domino servers. However, there are many factors that affect when, how, and if replication occurs. This section discusses some of those factors to investigate replication problems.

Common replication problems

The following table contains common replication problems.

Note: This is not an all-inclusive list. Replication problems can be complicated and caused by multiple factors.

Problem	Possible Cause
Replication did not occur at all.	■ Server or replica task is not running on one or both servers. ■ Servers have an authentication or authorization problem. ■ Servers have a connectivity problem. ■ Replication Settings prevent replication. ■ ACL of one replica does not permit replication to occur.
Replication occurred, but documents are missing.	■ ACL settings are incorrect. ■ Form read access lists or Readers fields are being used. ■ Replication Settings prevent some documents from replicating. ■ Replication History is incorrect or incomplete.
Replication occurred, but there are replication conflicts.	■ ACL settings are incorrect. ■ Author access with Authors fields are not being used.
Replication occurred, and deleted documents have returned.	Purge interval is set more frequently than the replication schedule.
Replication is not happening in a timely manner.	Replication schedule or replication topology is incorrect.

Solving Replication Problems...(continued)

Additional resources

Use any of the following additional resources:

- Set the Notes.ini file setting (Log_Replication=1, 2, 3 or 4), then view the Domino Log file (Log.nsf) for error messages and problems.
- Refer to the following topics in Lotus Domino Administrator 6 Help:
  - *Tools for troubleshooting replication*
  - *Replication -- Problems and error messages*
- Look up any error messages or keywords on the Lotus Support Services Web site at http://www-3.ibm.com/software/lotus/support/. For example, enter search criteria that you suspect is the problem: **replication readers field**

Server Access to Read Documents

A server can only replicate those documents that it has access to read. The following mechanisms affect a server's access to read a document:

■ Readers field

■ Form Read Access List

The Readers field

When a document contains a Readers field, all applicable servers must be included in the field for the server to be able to replicate the document. A blank Readers field indicates all users and servers can read the document.

There can be more than one Readers field in a document. In this case, all Readers fields cumulatively determine who has access to read the document.

Note: Using the Administration Process to delete a user could result in Readers fields being left blank in documents where the deleted user was the only reader specified.

The form Read Access List

A database designer can select roles, user, server, and group names on the form's Read Access List. When a user creates and saves a document based on the form, Notes creates a $Readers field and stores the names of those roles, user, server, and group names that the database designer selected on the form's Read Access List.

Selecting Documents to Replicate

Replication settings are used to limit the size of a replica or to display a subset of information relevant to a particular group of users. When using selective replication, verify the settings do not exclude necessary documents or fields. A person requires Manager access to the database to change replication settings.

Classroom Scenario

Worldwide Corporation's Phone Support group reports that certain documents in the Customer Service database are not replicating.

View replication settings

Follow these steps to verify the replication settings, and answer the questions.

Step	Action
1	Open the **Customer Service** database on Hub/SVR/WWCorp.
2	Choose **File→Replication→Settings**, and view the **Basics** tab.
3	Click **Space Savers**. ■ Are a subset of documents replicated?
4	Click **Send**. ■ Are deletions in the replica sent to other replicas?
5	Click **Other**. ■ Is replication disabled? ■ After what modification date are documents replicated?
6	Click **Advanced**. ■ What items are replicating when Hub/SVR/WWCorp replicates with West01/SVR/WWCorp?
7	Click **OK** to close the **Replication Settings for Customer Service** dialog box.

Using Replication History

The first time a server replica successfully replicates, Domino creates an entry in the **replication history**. The history contains the name of the other server, and the date and time of the last successful replication.

If a database does not replicate successfully, Domino does not update the replication history; therefore, a review of the replication history provides a quick way to determine the time of the last successful database replication.

Viewing replication history

Follow these steps to view the replication history for a database.

Step	Action
1	Open the database, and choose **File→Replication→History**.
2	View the history either by **Date** or **Server Name**.
3	To clear one entry, select the entry in the window, and click **Clear**. Click **Yes** to confirm.
4	To clear the entire history, click **Clear All**. Click **Yes** to confirm.
5	Click **Done** when finished.

Notes:

- Clearing the replication history requires Manager access.
- The database's replication history is not synchronized with other replicas.

Caution

Do not clear replication history unless the database does not contain all the documents it should.

If cleared, during the next replication Domino will scan all of the documents modified or created during the time specified in the **Only replicate incoming documents saved or modified after** replication setting; if the setting is blank, Domino will scan all documents in the database. Both procedures are time-consuming.

Resolving Replication Conflicts

A **replication conflict** occurs when the same document is edited in different replicas of a database in between scheduled replications, and either:

- The application developer did not specify to merge replication conflicts
  or
- The option was enabled, but the same field was edited in the same document on different servers, so Domino is unable to resolve the conflict.

A **save conflict** occurs when two people simultaneously edit the same document in the same replica.

Replication conflicts appear in a view as a Response document to a Main document. They are entitled **Replication or save conflict** and are preceded by a diamond.

Resolving replication conflicts

The system administrator, the application developer, or database manager can follow these steps to resolve a replication or save conflict.

Step	Action
1	Review the Main document and the conflict document to identify the differences.
2	Copy the changes to keep from the conflict document into the Main document.
3	Delete the conflict document.

Caution   Do not delete the Main document. Deleting the Main document in a response hierarchy removes the responses from the view. These orphaned documents no longer appear in the standard view and require additional design work to locate them.

Resolving Replication Conflicts...*(continued)*

Tip: Create a view to identify conflict documents

To locate replication or save conflicts, create a view that displays only conflict documents (not shown in a response hierarchy) using a selection formula such as:

```
SELECT @IsAvailable($Conflict)
```

To see a conflict document in context with its Main document:

1. Select the Replication or Save Conflict document in the view that displays conflicts.
2. Hold down the CTRL key.
3. Switch to the view that shows the Main document.

Minimizing replication and save conflicts

To reduce replication and save conflicts, the application developer can:

- Adjust the ACL to restrict Editor access.
- Use Author access with an Authors field.
- Enable document locking.

  Document locking permits users with Author access or higher to lock documents in that database which can reduce replication conflicts. For more information, refer to the following additional resources:

  - How to enable document locking: *Document Locking* in Lotus Domino Designer 6 Help
  - How users lock a document: *Locking Documents* in Lotus Notes 6 Help

- Change the form design to merge replication conflicts. Refer to the Lotus Domino Designer 6 Help topic *Forms Properties box - Form Info tab‡Conflict Handling*.

Coordinating the Purge Interval and Replication Schedule

When a document is deleted from a database, a deletion stub is left behind in the document's place. The **deletion stub** is a marker that tells the Replicator that the document should be deleted in other replicas. Deleted documents may return if a deletion stub is removed before it has a chance to replicate to all replicas.

Purging interval and deletion stubs

The purge interval controls when Domino purges deletion stubs from a database. Domino regularly removes deletion stubs that are at least as old as the value specified in **Replication Settings→Remove Documents Not Modified In The Last__Days**. Domino checks for deletion stubs to remove at 1/3 of this value.

Tip: To remove the deletion stubs immediately, set the **Remove Documents Not Modified In The Last__Days** field to **0**. The deletion stubs are removed when the Replication Settings dialog box is closed. Then, reset the field to its original value.

Best practices for replication and purge intervals

Consider the following factors when scheduling replication and setting the purge interval:

- When setting the purge interval, the administrator and database manager should consult to make sure that it coincides with replication schedules.
- Shortening the purge interval may result in deleted documents being replicated back to the replica. Replication should occur more frequently than the purge interval.

  For example, if the purge interval is set to 30 days and replication occurs once every two weeks, then deletion stubs are replicated before they are removed.

Coordinating the Purge Interval and Replication Schedule...(continued)

Checklist: Determining replication schedule problems

The following checklist describes the process used to determine the cause of problems with replication schedules.

	Task	Procedure
❑	1	Verify replication schedules.
❑	2	Check log files for replication time periods.
❑	3	Verify schedules set to accommodate all servers in sequence.

.

Verifying Server Access in the ACL

ACL changes are distributed via replication in much the same way as documents. The replication is two-way, but during any single-direction replication, the ACLs are either pulled or pushed, never both.

If database ACLs are at odds with each other, a replication that would otherwise be successful does not occur.

Examples of ACL problems that affect replication

The following table shows some potential problems with incorrect ACL settings.

Server with This Access...	Is Authorized to...	Potential Replication Problem
No access	Do nothing.	Replication stops immediately.
Reader access	Read documents in the database.	Server is unable to create/edit documents in the database.
Author access	Create documents in the database.	Server is unable to write changes made to documents in the database.

Best practices for server access

The following table shows each database ACL level and the suggested use for servers based on what documents the server will need to replicate.

Level	Suggested Use for Servers
No access	Assign to OtherDomainServers.
Depositor	Not applicable for servers.
Reader	Assign to servers to allow the server to receive information from a replica, but not send changes back to the other server.
Author	Not applicable, because servers do not author documents.
Editor	Assign to servers that store replicas of the database in order to distribute edits to documents.
Designer	Assign to servers that application developers use to update the database design.
Manager	Assign sparingly to one server to distribute ACL changes to other servers.

Verifying Server Access in the ACL...*(continued)*

Determining effective access

The database ACL contains a tool to help determine the effective access a person, server or group has to the current database. Follow these steps to determine effective access.

Step	Action
1	From **Domino Administrator**, click the **Files** tab.
2	Select the database.
3	Choose **Tools→Database→Manage ACL**.
4	Select the person, server, or group from the list, and click **Effective Access**. **Result:** A dialog box displays showing the following information for the selected user: ■ Access level ■ Privileges ■ Groups ■ Roles
5	To see the effective access for a different user, do one of the following: ■ Complete the **People, Servers, Groups** field, and click **Calculate Access**. ■ Click [icon], select the person, server, or group. Click **Add**, and then click **OK**.
6	Click **Done** to close the **Effective Access** dialog box.
7	Click **OK** to close the **Access Control List** dialog box.

Troubleshoot Server ACL Access Exercise

Classroom Scenario

Worldwide Corporation administrators are troubleshooting replication problems that are caused by incorrect database ACLs.

Identify appropriate server access guidelines

Follow these guidelines when setting server access:

1. Assign an access level that is at least as high as the highest user access level.
2. Include servers in Read Access Lists for database design elements.
3. Assign appropriate access to intermediate servers.
4. Assign Reader access for one-way replication. Give a server Reader access to a replica when you want to allow the server to receive information from the replica, but not to send changes back.
5. If a database uses Authors fields allowing authors to edit the documents they create, assign the server Editor access to allow author's changes to replicate.
6. A database should have at least the server where the replica resides in its ACL, and specify that server as the administration server for the database to allow the Administration Process to update names in the ACL.

Enter the number of the guideline that is the most appropriate solution to the problems outlined in the table below.

Solution	Problem
	Changes were made to Server A's replica by someone with Author access. Server A's changes do not replicate to Server B.
	Design changes were made to the replica on Server A, but do not replicate to Server B.
	A replica on Server A includes a form access list that limits who can read documents created with the form. Server B needs to pull new documents and changes to documents created with the form.
	Server B needs to receive changes from a replica on Server A, but should not send changes to Server A.
	ACL changes on Server A's replica replicate to Server C via Server B.
	A user whose name changed is unable to access a database due to an incorrect ACL.

Recovering from a Server Crash

With proper maintenance, the Domino server infrastructure works smoothly, and a server will rarely crash. If a server does crash, restart the server, then find out why it crashed and take the necessary steps to avoid future crashes.

Reasons for a server crash

The most common causes of server crashes are the following:

- Low or depleted system resources
- High server workload
- Software problems
- Network problems
- Changes to network or operating system environments
- Changes in hardware configuration (upgraded network cards or software configuration)

Automatically restarting the server with Fault Recovery

Domino 6 includes the option to automatically restart the server after a server crash. With Fault Recovery enabled, a server crash results in the server shutting itself down and then restarting automatically, without any administrator intervention. A fatal error, such as an operating system exception or an internal panic, terminates each Domino process and releases all associated resources.

Domino records crash information in the data directory. When the server restarts after a crash an e-mail is sent to the person or group specified in the Server document.

Recovering from a Server Crash...(continued)

Enabling Fault Recovery

Follow these steps to enable Fault Recovery.

Step	Action
1	From **Domino Administrator**, click the **Configuration** tab→**Server** section→ **All Server Documents** view.
2	Select the Server document, and click **Edit Server**.
3	On the **Basics** tab, in the **Fault Recovery** field, select **Enabled**.
4	In the **Mail Fault Notification to** field, select the administrator's name or group name.
5	Click **Save & Close**.

For more information, refer to the Lotus Domino Administrator 6 Help topic *Fault Recovery*.

Troubleshooting a Server Crash

This section introduces some of the helpful tools to troubleshoot a server crash.

Server crash checklist

To troubleshoot a server crash an administrator should:

❑ Collect system information.

❑ Reconsider any changes made to the Domino environment.

❑ Record any messages that begin with "Panic" on the console.

❑ Review crash files.

❑ If a Notes System Dump (NSD) log file was created, verify that the file date and time coincides with the date and time of the crash.

❑ Check the Miscellaneous Events view in the Domino Server Log.

Resources for more information

Use the following additional resources:

■ Look up any error messages and refer to the following White Papers on the Lotus Support Services Web site at http://www-3.ibm.com/software/lotus/support/:

  ■ *Troubleshooting Notes/Domino Server Crashes*
  ■ *Troubleshooting Notes/Domino Server Performance*

■ Refer to the following Lotus Domino Administrator 6 Help topics:

  ■ *How to troubleshoot server crashes*
  ■ *Server crashes -- Problems and error messages*

Contacting Lotus Support

Refer to the LDD Today article titled *Notes from Support: Calling Support with a Domino Server Crash*. In general, when contacting Lotus Support for help in determining the cause of a server crash, have the following information available:

■ Any root cause analysis already completed.

■ The complete crash scenario including the steps to reproduce the crash.

■ The collected information as outlined in *Appendix D: Additional Reference Material*.
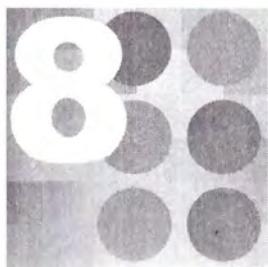
Resolving User Problems

This lesson covers the more common user problems and solutions. The lesson also refers to troubleshooting information available in Lotus Domino Administrator 6 Help. Common user problems include the following:

- Error message when accessing a database
- Error message when starting or using the Notes client
- Unable to connect to a server

Objectives

After completing this lesson, you should be able to:

- ✓ Troubleshoot database issues.
- ✓ Troubleshoot workstation problems.
- ✓ Troubleshoot connection problems.
- ✓ Troubleshoot mail problems.

Resolving Workspace and Database Problems

This section offers information on some of the more common requests for support.

Important Notes client files

The following table lists important Notes client files that affect the user's workspace.

File Name	Description	Should be Backed-up Regularly
Desktop6.ndk	A list of accessed databases and any private views and folders	Yes
Bookmark.nsf	Saved bookmarks, Welcome Page information and tool bars	Yes
Cache.ndk	Recently used elements for quicker access	Not necessary

Common workspace error messages

The following table lists common error messages that users receive and possible solutions.

Error Message	When Error Occurs	Possible Solution
Database object has been deleted	Usually occurs when trying to open a database.	Replace the database with a backup or try compacting the database.
Unable to load DESKTOP6.NDK. The file is damaged, obsolete or intended for a different operating system. Delete the file and create a new desktop?	Desktop6.ndk has been damaged, perhaps during a workstation crash.	■ Answer **No** to restore a backup of Desktop6.ndk. ■ Answer **Yes** to open Notes with a blank desktop.

(continued on next page...)

Resolving Workspace and Database Problems…*(continued)*

Common workspace error messages…

Error Message	When Error Occurs	Possible Solution
Cannot write to file (possibly it is READ-ONLY or the disk is out of space or not ready)	There is no space on the local drive, or there is insufficient access to write to the network drive.	■ Free disk space on the local drive. ■ Check disk space and privileges on the network drive.
Unable to load Bookmarks	The Bookmark.nsf file has been damaged.	Delete the Bookmark.nsf file. It is rebuilt using the databases stored in the Desktop6.ndk file.

Methods to free disk space on a local drive

In addition to removing unwanted applications and deleting unwanted files, suggest that users perform the following additional tasks:

■ Compact Domino databases stored on the local drive.

■ Compact the Notes desktop (Desktop6.ndk) and Bookmarks (Bookmark.nsf).

■ Limit the size of Cache.ndk in Workspace Properties.

When to compact a database

Compact databases to accomplish the following:

■ Compact in-place for space recovery and/or file size reduction.

■ Archive documents on server databases that are configured for document deletion and archiving.

■ Fix corrupt databases that cannot be accessed.

Resolving Workspace and Database Problems... *(continued)*

Compact a database

A user received an error message indicating a database may be corrupt. Follow these steps to compact a database from the user's desktop.

Step	Action
1	From the **Notes** client, click the **Databases** Bookmark, then select **Workspace**.
2	Select the ***Yourusername*'s Log** database (Log.nsf) on **Local**.
3	Choose **File→Database→Properties**.
4	Select the **Info** tab **i**.
5	Click **% used**. Note the number displayed. **Note:** Generally, compact a database when the **% used** is less than 90%.
6	Click **Compact** to compact the database.
7	Once the database is compacted, click **% used** again. **Result:** Did the number change?

Refreshing views in a single database

Often users report that a database is not displaying all of the documents. This may be caused by missing or damaged views in the database. This table describes the keyboard shortcuts to manually update or rebuild views.

When to Use	Shortcut	Description
To display current information in the view	F9	Updates the current view
To fix problems with a view	SHIFT+ F9	Rebuilds the current view
To rebuild or update all views	CTRL+SHIFT+F9	Rebuilds all views in a database that are not built; updates existing view indexes

Resolving Workspace and Database Problems...(continued)

Refreshing views in multiple databases

From the **Server** tab→**Status** tab→**Server Console** view, issue the following server console command to rebuild the view indices for all databases on the server:

```
load updall
```

Refer to the Lotus Domino Administrator 6 Help topic *Updall options* for information on the command line options for the Updall server task.

Additional resources

Use the following additional resources:

- For specific details on other issues, refer to Lotus Domino Administrator 6 Help. Begin by reviewing the following topics:
  - *Troubleshooting database performance*
  - *Managing databases with the Files tab*
  - *Monitoring database activity*
  - *Determining the file format of a database*
  - *Database maintenance*

- Additionally, refer to the following in Lotus Notes 6 Help:
  - **Troubleshooting** topics
  - Documents resulting from searching for keywords: desktop, error, or cache

- Look up any error messages on the Lotus Support Services Web site at http://www-3.ibm.com/software/lotus/support/.

Resolving Connection Problems

Network troubleshooting scenarios are related to specific network types. Specific troubleshooting steps for various network protocols are found in Lotus Domino Administrator 6 Help and Lotus Notes 6 Help.

Common connection error messages

The following list contains common error messages that users receive when failing to access a server:

■ Unable to find path to server
■ The server is not responding
■ The remote server is not a known TCP/IP host

Tools for resolving connection problems

Use the following tools to verify connectivity:

■ TCP/IP **Ping** utility
■ Trace Connection Tool

Using the Ping utility

For the TCP/IP protocol, test network connectivity to the server machine using the **Ping** utility. Ping the server by:

■ IP address
■ Host name
■ Common name
■ Hierarchical name

Resolving Connection Problems...(continued)

Using the Trace Connection Tool

To test connections to a server, use the **Trace Connection** tool. Results of a Trace Connection provide detailed information about the steps involved when connecting to a server and is useful in troubleshooting network connection problems.

Note: Network trace information automatically appears on the status bar of a Notes workstation. The level of detail displayed is controlled by the **Console_Loglevel** variable in the user's Notes.ini file.

Tracing network connections

Follow these steps to trace a network connection.

Step	Action
1	From the Notes client, choose **File→Preferences→ User Preferences→Ports**.
2	Highlight the protocol/port to analyze.
3	Click **Trace**.
4	Specify the server to attempt a connection.
5	For Trace Options, select the level of detail to record in the Notes log.
6	Click **Trace**.
7	Click **Done**.

Note: This tool is intended to test workstation-to-server connectivity problems. Use the Trace server console command to test server-to-server connectivity problems.

Resolving Connection Problems...(continued)

Troubleshooting tips for resolving connection problems

After verifying the server is running, verify that the following information is correct:

■ The server's IP address in DNS or hosts files.

■ The following fields in the Server document in the Domino Directory.

Tab	Field Name
Basics	■ Server name ■ Fully qualified Internet host name
Ports	■ Port is Enabled ■ Net Address

■ The following Connection document fields in the user's Personal Address Book.

Tab	Field Name
Basics	■ Server name ■ Use LAN port or Modem port(s) ■ Connection type
Advanced	Destination server address (for the Local Area Network and Network Dialup Connection type)

■ The following Location document fields in the user's Personal Address Book.

Tab	Field Name
Basics	Location type
Servers	■ Home/mail server ■ Domino directory server
Ports	Ports to use
Mail	■ Mail file location ■ Mail file ■ Domino mail domain

■ If recent changes to a server include host name, IP address, or port names, it may be necessary to clear some system fields in the user's Location document or the Server document. Refer to the following technotes on the Lotus Support Services Web site:

■ *How to Disable Server Cache of the Last Known Address*

■ *Where are Server Addresses Cached in Notes and Domino?*

Resolving Connection Problems...(continued)

Additional resources

Use any of the following additional resources:

■ View the Domino Server Log (Log.nsf) for error messages and problems.

■ Refer to the following topics in Lotus Domino Administrator 6 Help:

■ *Modems and remote connections -- Troubleshooting*

■ *Network connections over NRPC -- Troubleshooting*

■ *Network dialup connections -- Troubleshooting*

■ Look up any error messages on the Lotus Support Services Web site at
http://www-3.ibm.com/software/lotus/support/.

Responding to Mail Problems

The following table lists common mail problems and possible resolutions.

Problem	Possible Cause	Tools to Use
A user is not receiving any mail.	A user's mail file name was changed or moved without updating the Person document.	Mail trace
A message did not reach the intended recipient.	A server along the mail path was down.	Message tracking

Sending a mail trace

Follow these steps to trace the path a mail message would take to get to a destination mail file.

Step	Action
1	From **Domino Administrator**, click the **Messaging** tab→**Mail** tab.
2	Choose **Tools→Messaging→Send Mail Trace**.
3	In the **To** field, enter or select a mail user.
4	In the **Subject** field, enter Mail trace message for *username*.
5	Choose a delivery report option: ■ **Each server on path:** Returns a Trace report indicating each router stop. ■ **Last server Only:** Returns a Delivery Confirmation report from the destination server only.
6	Click **Send**.
7	View the delivery report in your mail file.

Note: The Mail Trace tool does not deliver mail to the user's mail file, it traces the path a message would travel to reach another user's mail file.

Responding to Mail Problems...(continued)

What is message tracking?

Message tracking allows administrators to follow a previously sent mail message. A Message Tracking database on each server records the progress of the message to its final destination.

For information on enabling message tracking, refer to Lotus Domino Administrator 6 Help or the *Administering IBM Lotus Domino 6: Building the Infrastructure* course.

Track a mail message

Follow these steps to track a mail message sent to you from Doctor Notes.

Step	Action
1	From **Domino Administrator**, select **Hub/SVR/WWCorp** to administrator.
2	Click the **Messaging** tab→**Tracking Center** tab.
3	Click **New Tracking Request**.
4	Complete the **New Tracking Request** dialog box as shown below. **New Tracking Request** _From_ Doctor Notes OK _To_ *Your administrator name* Cancel _Sent_ Today Start at ⦿ Sender's home server ◯ Current Server Hub/SVR/WWCorp Optional _Subject_ _Message ID_ Please enter as much data as you know about the mail you want to track. The more you provide, the more refined the search will be. **Note:** Click 🔲 to select the person for the **From** and **To** fields.
5	Click **OK**.
6	View the resulting reports.

Troubleshoot Server and User Problems Exercise

Classroom Scenario

Worldwide Corporation administrates are hearing reports of users having problems accessing Worldwide's servers and receiving mail. Additionally, there are some reports of other server problems. Worldwide administrators need to use all available troubleshooting tools to determine the cause of the problems.
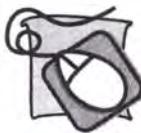
Investigate causes of server problems

Investigate the following problems, then record your findings in the tables.

Problem 1: Servers in the East and West regions are not replicating with the Hub server. The Domino Server Log file indicates the following error message:

```
Error connecting to server Hub/SVR/WWCorp: Server error: You are
not authorized to use the server
```

Item	Findings
Documents reviewed	
Tools used	
Problem determination	

Problem 2: A request to move Michelle Grassi's mail file did not complete. The mail file moved to the new server, but the old mail file was not deleted.

Item	Findings
Documents reviewed	
Tools used	
Problem determination	

(continued on next page...)

Troubleshoot Server and User Problems Exercise...(continued)

Investigate causes of user problems

Problem 3: William Harris would like to schedule a Simple Action agent in his mail file. When he attempts to save the agent, he receives the following error message:

```
You are not authorized to perform that operation
```

Item	Findings
Documents reviewed	
Tools used	
Problem determination	

Problem 4: William Harris is complaining of not receiving any mail. On examination, the Domino Server Log file shows the following error message:

```
Error delivering to HUB/SVR/WWCORP mail\wharris; File does not
exist
```

Item	Findings
Documents reviewed	
Tools used	
Problem determination	

Problem 5: Users receive the following error attempting to connect to Hub:

```
The remote server is not a known TCP/IP host
```

Item	Findings
Documents reviewed	
Tools used	
Problem determination	

Appendix A
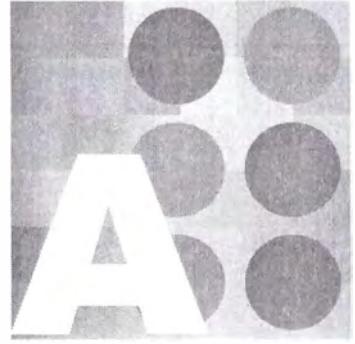
Exercise Solutions

About This Appendix

This appendix provides solutions to classroom exercises. Information about activities is not provided.

All exercise keys are provided in the order in which they appear in the course materials.

Lesson 1: Managing Users and Groups

Change the Organizational Hierarchy Exercise

Add an Organizational Unit (OU)

Follow these steps to register regional Organizational Unit certifiers.

Step	Action
1	Click the **Configuration** tab→**Tools**→**Registration**→**Organizational Unit**.
2	Select **Supply certifier ID and password**.
3	Click **Certifier ID**, select the /WWCorp certifier, **WWCorp.id**, and click **Open**.
4	Click **OK**.
5	Enter lotusnotes, and click **OK**.
6	On the **Certifier Recovery Information Warning** dialog box, click **OK**.
7	Click **Registration Server**, enter *your assigned server*, and click **OK**.
8	Click **Set ID File**, enter the certifier ID file name, such as, BR.id in the **\Lotus\Notes\Data\Ids\Certs** directory, and click **Save**.
9	Enter BR in the **Organizational Unit** field.
10	Enter lotusnotes for the certifier password.
11	Select **Weak password, not very secure (6)** in the **Password quality scale**.
12	Click **Register**.
13	Click **OK** to acknowledge success.

Lesson 1: Managing Users and Groups...*(continued)*
Change the Organizational Hierarchy Exercise...

Request a new certifier

Follow these steps to reassign a user to another organizational unit certifier.

Step	Action
1	From the **Domino Administrator**, select your server.
2	Click the **People & Groups** tab→**Domino Directories** section→ **WWCorp's Directory** section→**People** view.
3	Select the people to move to a new certifier.
4	Choose **Tools**→**People**→**Rename**.
5	In the **Honor old names for up to ___ days (Between 14 and 60 days)** field, enter a value. The default is 21 days.
6	Click **Request Move to New Certifier**.
7	Select **Supply certifier ID and password**. Click **Certifier ID**, select the *original* certifier ID file (either West.id or East.id), and click **Open**.
8	Click **OK** to continue.
9	Enter lotusnotes for the password, and click **OK**.
10	Select the new certifier ID file created earlier in this exercise from the **New Certifier** drop-down box, and then click **OK**.
11	Click **OK** to submit the request to change the common name.
12	Click **OK** after viewing the number of entries processed.

Lesson 1: Managing Users and Groups...*(continued)*
Change the Organizational Hierarchy Exercise...

Complete the move

Once the request is posted, the move to the new certifier is approved by the owner of the new certifier. Follow these steps to complete the move.

Step	Action
1	From **Domino Administrator**, click the **Server** tab→**Analysis** tab→ **Administration Requests (6)** section→**Name Move Requests** view.
2	Select the users to be moved.
3	Click **Complete move for the selected entries**.
4	Select **Supply certifier ID and password**. Click **Certifier ID**, select the **new** certifier ID file created earlier in this exercise, and click **Open**.
5	Click **OK** to continue.
6	Enter lotusnotes for the password, and click **OK**.
7	Accept or change the expiration date and click **OK**.
8	Click **OK** to submit the request to change the common name.
9	Click **OK** after viewing the number of entries processed.

Lesson 1: Managing Users and Groups...(continued)
Assign Users to a Group Exercise

Create a group

Follow these steps to create the group.

Step	Action
1	From **Domino Administrator**, select your server.
2	Click the **People & Groups** tab→**Domino Directories** section→ **WWCorp's Directory** section→**Groups** view.
3	Click **Add Group**.
4	On the **Basics** tab, complete the following fields: ■ **Group name:** Unique name describing the group's use, for example, `Worldwide Support` ■ **Group type: Access Control List only** ■ **Description:** `All WW servers, support and admins` ■ **Members:** `LocalDomainServers, LocalDomainAdmins,` *other users registered previously in the lesson*
5	Click **Save & Close**.

Answer the following questions:

■ What did you name the group?

  Possible answer: Worldwide Administration

■ What group type did you use? Why?

  Possible answer: Access Control List only, because the group will be used to control access to a database.

■ List the group members.

  Possible answer: LocalDomainServers, LocalDomainAdmins, other users registered previously in the lesson

Lesson 1: Managing Users and Groups...(continued)

Assign Users to a Group Exercise...

Change group membership

Follow these steps to change a users group membership.

Step	Action
1	From **Domino Administrator**, select your assigned server.
2	Click the **People & Groups** tab.
3	Choose **Tools→Groups→Manage**.
4	From the **Look in** drop-down box, select the appropriate directory.
5	Select a user from the **People and Group** listing in the left pane.
6	For the **Group Hierarchies**, choose the appropriate directory listing.
7	Select **All group hierarchies**, then select **Show Group Type All**.
8	From the right pane, select a group.
9	Click **Add**.
10	From the left pane, select another user you created. Drag and drop the user to a different group.
11	Click **Done**.

Lesson 1: Managing Users and Groups...(continued)

Assign Users to a Group Exercise...

(Optional) Delete the group

Follow these steps to delete the group.

Step	Action
1	From **Domino Administrator**, select your server.
2	Click the **People & Groups** tab→**Domino Directories** section→ **WWCorp's Directory** section→**Groups** view.
3	Select the group created earlier in this exercise.
4	Click **Delete Group**.
5	If the server is running Windows NT, Domino Administrator will prompt to delete the corresponding group account from Windows NT User Manager. Click **Yes** to delete the group account.
6	Select one of the following options: ■ **Yes:** Immediately deletes all references to the group in the current replica of the Domino Directory. ■ **No:** Posts a **Delete in Directory** request in the Administration Requests database. The Administration Process deletes references to the group in the Domino Directory and database ACLs.
7	Click **OK**.

Lesson 4: Updating Servers

Enable Cross-Organization Authentication Exercise

Determine cross-certification levels

The following figure shows a solution that provides the most secure environment.
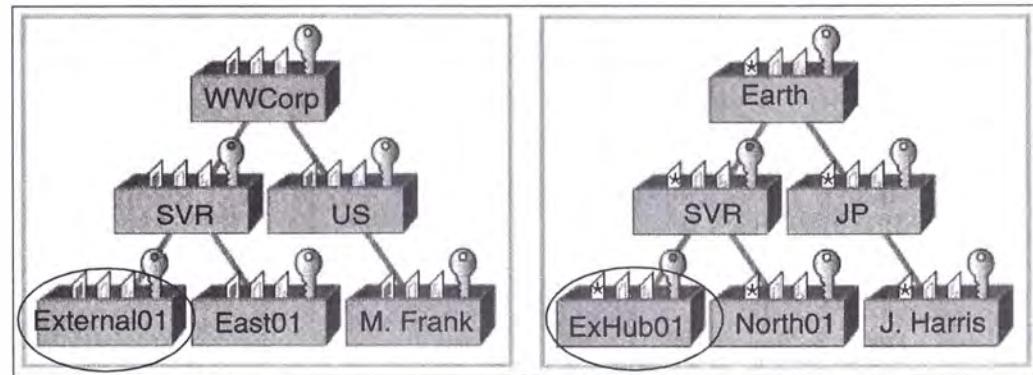
The following table includes the cross-certificates to create in order to enable the solution shown in the graphic.

Cross-Certificate Issued by...	Cross-Certificate Issued to...	Cross-Certificate Stored in Directory for...
External01/SVR/WWCorp	ExHub01/SVR/Earth	WWCorp domain
ExHub01/SVR/Earth	External01/SVR/WWCorp	Earth domain

Lesson 4: Updating Servers...*(continued)*

Set Administration Access Exercise

Determine access

Below are examples of solutions for a server and administrator in the East region.

1. Complete the following table with the new value for the server access fields. If the field should remain unchanged, leave the New Value column blank.

   Possible answer

Server Access Field	New Value
Create databases & templates	EastAdmins
Create new replicas	EastAdmins, EastServers
Full Access administrators	Doctor Notes/WWCorp
Administrators	EastAdmins
Database Administrators	WestAdmins

2. What servers, users, or groups require Manager access to databases on each regional server?

   Possible answer: EastAdmins and EastServers

Allow access to your assigned server

Follow these steps to allow the access outlined in Question 1 above.

Step	Action
1	From the **Domino Administrator**, click the **Configuration** tab→ **Server** section→**All Server Documents** view.
2	Select the appropriate Server document.
3	Click **Edit Server**.
4	Select the **Security** tab.
5	In the **Administrators** section, complete the following fields: ■ **Full Access administrators:** Doctor Notes/WWCorp ■ **Administrators:** EastAdmins ■ **Database Administrators:** WestAdmins

Lesson 4: Updating Servers...(continued)

Allow access to your assigned server...

Step	Action
6	In the **Server access** section, complete the following fields: ■ **Create databases & templates:** EastAdmins ■ **Create new replicas:** EastAdmins, EastServers
7	Click **Save & Close**.
8	To restart the server, click the **Server** tab→**Status** tab.
9	Choose **Tools→Server→Restart**.
10	Enter the server's password (optional), and click **OK**.
11	Click **Yes** to confirm restarting the server.

Test access

Test the changes just made to access controls by completing the following tasks.

1. Create a database on Hub. Use any template for the database. Include your initials in the database title and file name to distinguish it from other students' databases.

Step	Action
1	Choose **File→Database→New**.
2	Select **Hub/SVR/WWCorp** from the list of servers.
3	Enter an appropriate database title and file name.
4	Select any template, such as, **Discussion - Notes & Web (R6)**, Discsw6.ntf.
5	Click **OK** to create the database.

Lesson 4: Updating Servers...(continued)

Test access...

2. Modify the ACL to grant your assigned server the appropriate access.

Step	Action
1	Click the **Files** tab.
2	Select the database you created earlier in this exercise.
3	Choose **Tools→Database→Manage ACL**.
4	Click **Add**, enter *yourassignedserver* and click **OK**.
5	Grant your assigned server **Manager** access.
6	Click **OK** to close the Access Control List dialog box.

3. Create a replica of the database on your assigned server.

Step	Action
1	From **Domino Administrator**, select **Hub/SVR/WWCorp** to administer.
2	Click the **Files** tab, and expand the **Database** menu in the Tools pane.
3	Drag and drop the database you just created onto the **Create Replica(s)** database tool.
4	Select your assigned server from the list on which to create the replica, and click **Add**.
5	Click **OK** to submit a request to create the replica.

4. Once everyone has restarted their servers, access a server in the other region from Domino Administrator.

Step	Action
1	Click the Domain servers icon.
2	Expand the **All Servers** section, and select a server in the other region.

Lesson 4: Updating Servers...*(continued)*

Test access...

5. For each tab in Domino Administrator, perform at least one task. One example is included in the following table.

Step	Action
1	Select a server in a different region.
2	Click the **Files** tab, then select a database.
3	Choose **Tools→Database→Compact**.
4	Click **OK**. **Result:** The database is compacted successfully because you have the **Database administrators** access.
5	Choose **File→Database→New**.
6	Select the server accessed in Step 1 from the list of servers.
7	Enter an appropriate database title and file name.
8	Select any template, such as, **Discussion - Notes & Web (R6)**, Discsw6.ntf.

9	Click **OK** to create the database.
	Result: The following error message displays:
	`You are not authorized to create new databases on this`
	`server:` *otherservername* *databasename.*`nsf`
	Click **OK**, then click **Cancel** to cancel creating the new database.

10	Click the **Server** tab→**Status** tab→**Server Console** view.
11	Click **Live**.
12	Enter any Domino command, such as `Show Tasks`, and click **Send**. **Result:** You will be able to use the console because Database Administrators have all the rights of **Full Remote Console Administrators**.

6. Select another server in your region and repeat the tasks.

   Result: You will be authorized to perform all tasks in the above procedure.

Lesson 5: Setting Up Server Monitoring

Determine Server Status Exercise

Identify status

Question 1

Follow these steps to obtain the information to answer Question 1.

Step	Action
1	From **Domino Administrator**, select your server.
2	Click the **Server** tab→**Analysis** tab→**Monitoring Results** section→ **Statistic Reports** section→**Mail_Database** view.
3	Open the most recent report.
4	Scroll down to **Replication Statistics**.
5	Close the Statistics report.
6	Select **Notes Log**→**Replication Events**.
7	Select your server and a date.
8	Open the log file.

Question 2

Follow any one of the following steps to obtain the information to answer Question 2:

❖ Click the **Server** tab→**Statistics** tab→**Mail** section→**TotalPending** view.
❖ Click the **Server** tab→**Analysis** tab→**Monitoring Results** section→ **Statistic Reports** section→**Mail_database** view.
❖ Click the **Messaging** tab→**Mail** tab→**Mail Routing Status** view.

Lesson 7: Resolving Server Problems

Troubleshoot Server ACL Access Exercise

Identify appropriate server access guidelines

Follow these guidelines when setting server access:

1. Assign an access level that is at least as high as the highest user access level.
2. Include servers in Read Access Lists for database design elements.
3. Assign appropriate access to intermediate servers.
4. Assign Reader access for one-way replication. Give a server Reader access to a replica when you want to allow the server to receive information from the replica, but not to send changes back.
5. If a database uses Authors fields allowing authors to edit the documents they create, assign the server Editor access to allow author's changes to replicate.
6. A database should have at least the server where the replica resides in its ACL, and specify that server as the administration server for the database to allow the Administration Process to update names in the ACL.

Enter the number of the guideline that will most likely solve the problems outlined in the table below.

Solution	Problem
5	Changes were made to Server A's replica by someone with Author access. Server A's changes do not replicate to Server B.
1	Design changes were made to the replica on Server A, but do not replicate to Server B.
2	A replica on Server A includes a form access list that limits who can read documents created with the form. Server B needs to pull new documents and changes to documents created with the form.
4	Server B needs to receive changes from a replica on Server A, but should not send changes to Server A.
3	ACL changes on Server A's replica replicate to Server C via Server B.
6	User whose name changed is unable to access database due to incorrect ACL.

Lesson 8: Resolving User Problems

Troubleshoot Server and User Problems Exercise

Investigate causes of server problems

Investigate the following reported problems, then record the documents reviewed, the tools your investigating, and the problem determined to be the cause.

Problem 1: Servers in the East and West regions are not replicating with the Hub server. The Domino Server Log file indicates the following error message:

```
Error connecting to server Hub/SVR/WWCorp: Server error: You
are not authorized to use the server
```

- Documents reviewed: **Hub** Server document→**Security** tab→ **Access server** field.
- Tools used: Domino Administrator; **Configuration** tab.
- Problem determination: LocalDomainServers does not have access to the Hub server. The LocalDomainAdmins group is the only group permitted access to the Hub server.

Problem 2: A request to move Michelle Grassi's mail file did not complete. The mail file moved to the new server, but the old mail file was not deleted.

- Documents reviewed: **Administration Requests** database→**Pending Administrator Approval** view→Mail file deletion request document.
- Tools used: Domino Administrator; **Server** tab→**Analysis** tab.
- Problem determination: The request to delete the old mail file has not been approved.

Problem 3: William Harris would like to schedule a Simple Action agent in his mail file. When he attempts to save the agent, he receives the following error message:

```
You are not authorized to perform that operation.
```

- Documents reviewed: **Hub** Server document→**Security** tab→**Run Simple and formula agents** field.
- Tools used: Domino Administrator; **Configuration** tab.
- Problem determination: The user does not have access to run simple and formula agents - only the LocalDomainAdmins group has that access.

Lesson 8: Resolving User Problems...(continued)

Troubleshoot Server and User Problems Exercise...

Investigate causes of user problems

Investigate the following reported problems, then record the documents reviewed, the tools your investigating, and the problem determined to be the cause.

Problem 1: William Harris is complaining of not receiving any mail. On examination, the Domino Server Log file shows the following error message:

```
Error delivering to HUB/SVR/WWCORP mail\wharris; File does not exist
```

- Documents reviewed: User East01's Person document; **Mail server** field.
- Tools used:
  - Mail trace tool: Domino Administrator; **Messaging** tab→**Mail** tab; **Tools→Messaging→Send Mail Trace**.
  - Person document: Domino Administrator; **People & Groups** tab→ **People** view.
- Problem determination: The mail server name for User East01 is incorrect in the user's Person document. The mail file was moved manually to another server, and the Person document was not updated.

Problem 2: Users receive the following error attempting to connect to Hub:

```
The remote server is not a known TCP/IP host
```

- Documents reviewed: Hub's Server document; **Ports** tab→**Notes Network Ports** tab→**Net Address** field.
- Tools used: Domino Administrator; **Configuration** tab.
- Problem determination: The host name is incorrect in the Hub Server document.

Appendix B
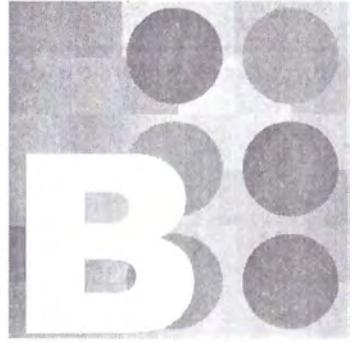
Worldwide Corporation Infrastructure Plan

About This Document

This document gives an overview of Worldwide Corporation's infrastructure. It is intended to provide an overall view of the environment as designed by the planning team. It does not provide details on specific Domino functionality.

This document will be continually updated. Administrators should refer to the Policies and Procedures database on any Worldwide Corporation server for the latest version of this document.

IBM Lotus Notes/Domino is Worldwide Corporation's global standard for electronic mail and for developing and deploying groupware applications.

Organization Structure

The following figure shows the structure for Worldwide Corporation.

Headquarters

Manufacturing
Research and Development
Product Management
Quality Control
Finance
Human Resources
System Aministration

West

Sales and Marketing
Customer Support
Distribution
Human Resources
Finance
System Administration

Sales Offices

Sales Reps

East

Sales and Marketing
Customer Support
Distribution
Human Resources
Finance
System Administration

Sales Offices

Sales Reps

User Needs

The following table lists the access required by Worldwide Corporation users.

Information Groups	Who	Domino Server
Email/Communication	All	Application
Policies and Procedures	All	Web
Price list Product catalogue	Sales Customers Resellers	Application Web
Customer Information: (DECs) Customer Service Application	Sales Support Distribution	Application Mail Communication
Process information: Product Design Order Processing	Development Product Management Manufacturing Sales	Application Web
Human Resources	All	Application

Note: User needs were determined by function across all geographies.

Servers by Task

Worldwide Corporation will designate servers to specific tasks based on Information Groups. The following table lists the servers, associated tasks, and rationale behind the decision.

Server Type	Tasks	Rationale
Hub	Routes mail and replication databases to and from other hub or spoke servers	Provide easier administration and maintenance.
Internet Messaging	Provides non-Domino mail services such as: ■ POP3 ■ IMAP ■ SMTP ■ NNTP ■ LDAP	Use Domino server to: ■ Provide employees with access to non-Domino mail files.
Mail	Stores users' mail and databases and routes mail across the intranet and Internet	■ Provide easier administration. ■ Minimize server processor load. ■ Reduce network traffic. ■ Provide predictable server performance and grouping of users. ■ Allow user access to databases when mail server is down.
Application	Stores application databases	■ Provide easier administration. ■ Group applications by usage, replication needs, and/or security requirements. ■ Allow tuning of server to optimize performance and response time independent of mail usage. ■ Ease of expansion by adding new database servers as usage and storage needs increase.
Web	Provides access to an application from the Internet or to corporate intranet. Can use either: ■ Domino HTTP stack ■ Microsoft IIS	■ Can place outside the firewall for Internet access. ■ Provide employees with access to corporate information from a browser.

Servers by Location

Worldwide Corporation's domain

There will be one Domino Domain (World) that includes all Worldwide Corporation offices. Worldwide Corporation's Internet domain name was previously established as WWCorp.com.

Topology

Worldwide Corporation has selected a hub-and-spoke topology for ease of management and future expansion.

Each regional office will have a hub server and one or more spoke servers. Each site will be set up to run independently, although they will be connected to the corporate hub.

Connection documents are required for replication to tell the corporate hub how and when to communicate with other servers and for spoke servers to connect to the corporate hub.

Headquarters is the center of the infrastructure and houses the main hub server, which has high-speed links running to the offices. Each individual Domino server is responsible for its own mail routing and replication events. The hub server is responsible for replication of the critical databases between all its spoke servers.

The following map shows the locations and types of servers.
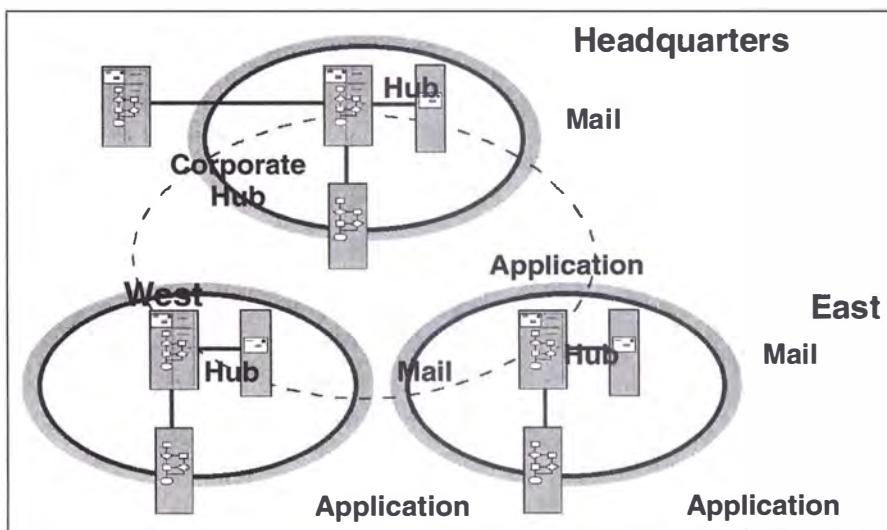
Servers by Location...(continued)

The Headquarters hub server

The hub server is the administration server for the Worldwide Corporation domain and replicates the Directory Catalog and the Administration Requests database to all other Domino servers within the Worldwide Corporation domain (WWCorp).

Sales offices and sales reps will dial in to their local regional hub server using Notes clients and Internet clients, such as browsers.

Customers and vendors will have access through a Web server at Headquarters.

Domino Named Networks

The regional sites will be logically grouped into Domino Named Networks (DNNs) since they share a common protocol (TCP/IP) and are constantly connected.

Grouping the Domino Named Networks this way will ensure that users see information on their local servers to reduce network traffic.

Each country office has one or more Domino servers. The following table shows the countries to be configured and the Domino Named Networks (DNNs) for each country.

Region	Code	DNN	Connect Status
Headquarters	HQ	WWCorpHQ	WAN
East	East	WWCorpEast	WAN
West	West	WWCorpWest	WAN

System Administration

System administration is locally controlled by region, but monitored from the Corporate office.

Administration tasks are controlled by regional administrators.

General policies and guidelines are maintained and distributed from the Corporate office.

Implementation and design changes are carried out after business justifications are submitted and approved.

All system administrators use the Domino Administrator and Web Administrator for all administration tasks.

Network Strategy

Worldwide Corporation added to their existing WAN by:

■ Incorporating TCP/IP as their primary network protocol

■ Developing a plan to phase out non-TCP/IP protocols over time

■ Using a global frame relay network as its global WAN

■ Adding networking to the West office

■ Adding networking connections to all offices from Headquarters

■ Upgrading existing server network cards and adding network cards

Although the WAN was upgraded, Worldwide Corporation does not want to rely solely on the network. They purchased additional servers for regional offices to ensure reliability and consistency across geographical locations.

Directory Strategy

There will be only one Domino domain (WWCorp) for the entire Worldwide Corporation Domino environment. The model matches the physical layout of the Worldwide Corporation WAN. The first configured server (the corporate hub) will have full administration rights over the entire domain.

The Domino Directory will reside on the corporate hub server in Lisbon, and replicate to each regional hub server. The corporate hub will create Directory Catalogs, and replicate to regional hubs for use by remote users. Remote users can keep a local replica of the Directory Catalog on the client for faster response time and timely encryption of messages.

System administrators will periodically update the Directory Catalog and replicate once a day to hub servers.

Directory access is from:

- Notes clients
- Web browsers
- Other e-mail and directory clients

Replication Topology

A hub-and-spoke topology will be used for replication. This structure consists of a main hub with two spoke servers, which are the regional hub servers. Each regional hub server also has its own spoke servers.

The corporate hub server will be the main hub and take overall control of replication. There will be Connection documents from the main hub to all regional hub servers.

Replication will be Pull Push.

The following map shows Worldwide Corporation's replication topology.
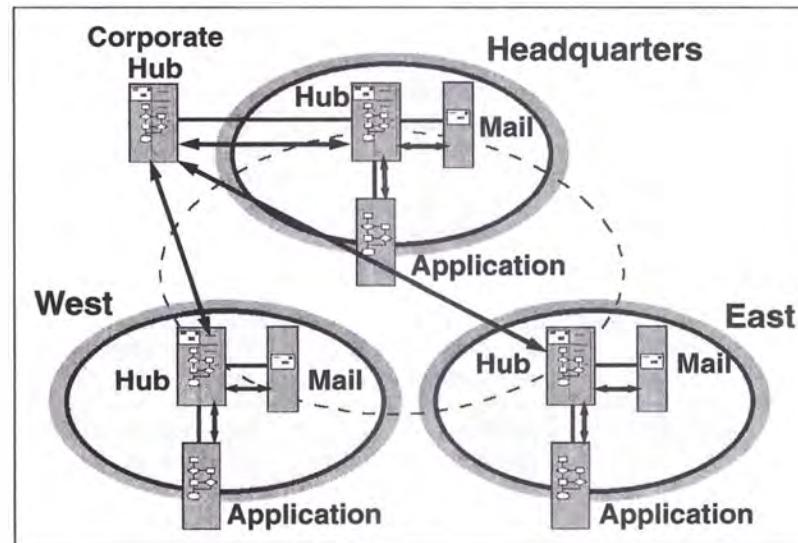
Application Types

Types of applications will be separated and reside on different application servers to isolate problems and simplify management. All applications will be replicated to the corporate hub for central control and reliability.

Application Type	Resides on Corporate Application Server and...	Replication Schedule	Policies and Restrictions
Customer service application	All regional application servers	Daily during mutual off-peak hours for Lisbon and regional hub	■ Local languages and customs, ■ Escalation procedures
Purchasing application	All regional application servers	Daily during mutual off-peak hours for Lisbon and regional hub	Local languages and regulations
Policies and procedures database	All regional application servers	When changes are made	Local languages and customs
Price lists	All regional application servers	When changes are made	Local languages and currencies
Catalogs	All regional application servers	Quarterly, or when changes are made	Local languages
MRP application	West application server	When changes are made	Local languages

Mail Routing Strategy

Each region will have its own server that is responsible for local mail delivery, but will rely on the corporate mail server for inbound Internet mail:

- Simple Message Transfer Protocol (SMTP) will route mail to the Internet.
- The Notes Remote Procedure Call, NRPC, will route mail within the corporate intranet.

The following configuration provides for ease of configuration and optimum load balancing and failover:

- One Internet domain
- ISP as a relay host to Internet
- Regional Domino Named Networks (one for each region)
- The corporate hub is enabled to route external mail using the SMTP protocol.
- All mail servers have Connection documents and route mail using NRPC internally.

Mail administrators

Administrators must perform the following tasks:

- Store the Internet domain name in the Foreign SMTP and Global Domain documents.
- List the inbound mail servers in the MX records in the Domain Name Service under the domain's name. Only one is required. (Note that load balancing for multiple servers is dependent on the algorithm used by the client SMTP system to select a server from the MX records.)
- Configure complete address lookup or configure local part only lookup to identify each mail recipient's mail server so that the router can make the final delivery.

Mail Routing Strategy...(continued)

Mail clients

Initially, all mail users will have Notes mail files. In the future, some mail users may use other Internet mail client software. At that time, Worldwide Corporation will set up select Internet POP3 Messaging Servers for non-Notes mail clients to access mail files on the Domino server.

Mail monitors and controls

The following mechanisms will be put into place for monitoring and controlling mail:

■ Automated testing of mail routers

■ Mail quotas

■ Mail journaling

■ Maximum message size for inbound and outbound message set to 10 megabytes.

■ User restrictions, such as full text indexing

Mail routing topology

The following map shows Worldwide Corporation's mail routing topology.
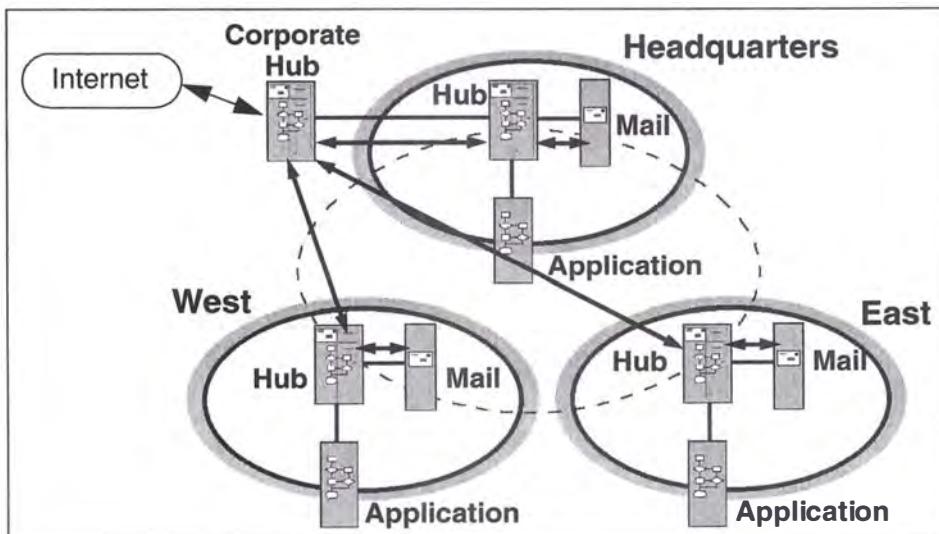
Worldwide Corporation Naming Conventions

The following table defines the Worldwide Corporation naming scheme.

Organization Component	Value	Certifier
Organization (O)	WWCorp	CERT.id
Organizational Units (OU)	HQ: Headquarters WEST: West EAST: East SVR: All servers	HQ.id WEST.id EAST.id SVR.id

Organizational Units are based on geographical regions.

The servers' Organizational Unit will be used for better control of management and creation of servers.

All Organizational Units and common names are descendants of the Organization certifier /WWCorp.

User naming

The following table provides user naming conventions.

Type	Syntax
Common name for Domino environment	Firstname Lastname
Internet mail addressing	username@WWCorp.com where username = FirstInitial Lastname

Worldwide Corporation Naming Conventions...(continued)

Server naming

The following table provides examples of regional server names.

Region	Code	Server Names (Server Types)
Headquarters	HQ	HQHUB/SVR/WWCorp (Hub/Comm) HQAPP01/SVR/WWCorp (Application) HQMAIL01/SVR/WWCorp (Mail)
East	East	EASTHUB/SVR/WWCorp (Hub) EASTAPP01/SVR/WWCorp (Application) EASTMAIL01/SVR/WWCorp (Mail)
West	West	WESTHUB/SVR/WWCorp (Hub) WESTAPP01/SVR/WWCorp (Application) WESTMAIL01/SVR/WWCorp (Mail)

Naming examples

The following table provides naming examples.

If You Want To...	Then...
Create a new server.	Use the name XXType##/SVR/World, where: ■ **XX** is the standard country code ■ **Type** is the server type, for example, Mail ■ **##** is the server number of this type For example, the first mail server in Australia might be: AUMAIL01/SVR/WWCorp
Create a new Organizational Unit.	Use the standard country code that identifies the location of the Organizational Unit. A new Organizational Unit for Canada might be: /CN/WWCorp
Create a new user.	Certify under the regional Organizational Unit where the user works. A new user named Sara Jones in London would be: Sara Jones/UK/WWCorp The corresponding Internet name would be: SJones@WWCorp.com

Worldwide Corporation Naming Conventions...*(continued)*

Certifier/ID management policy

The following table describes the certifier/ID management policy.

Type	Management Policy
Organization certifier	■ Corporate system administrators create the O certifier. ■ Corporate system administrators create the OU certifiers. ■ Access is limited to two administrators using multiple passwords. ■ Store IDs on multiple floppy disks in protected areas.
Organizational Unit certifiers	■ Regional administrators and Corporate administrators keep copies of OU certifiers. ■ Store IDs on multiple floppy disks in protected areas.
Server IDs	■ Corporate system administrators create all server IDs. ■ Store IDs on the server. ■ Use only for the server.
User IDs	■ Regional administrators create user IDs. ■ Regional system administrators keep copies of IDs in a secure database on the regional hub server. ■ Use a Certification Log database to track certification. ■ All Certifier IDs have multiple passwords and expiration dates of two years from date of creation. ■ Store backups in a secure off-site location.
Key files for Internet (X.509) Certificates	■ Using Domino as a Certificate Authority, administrators will create X.509 certificates using the Certificate Authority Application on a workstation and store the CA key ring on that workstation, not on the server. ■ Do not distribute these files to other administrators in the organization. ■ Store the certificates in a secure off-site location. ■ Store in corporate user Notes ID files. ■ Store in trusted LDAP directories (for customers).

Worldwide Corporation Naming Conventions...(continued)

Hierarchical naming for Worldwide Corporation

The following diagram shows the organization hierarchy, including currently planned server names.

```
                        /WWCorp
        ┌──────────────────┼──────────────────┐
  /East/WWCorp        /West/WWCorp        /SVR/WWCorp
                                          │__HUB
                                          │__HQMAIL01
                                          │__HQAPP01
                                          │__WESTHUB
                                          │__WESTMAIL01
                                          │__WESTAPP01
                                          │__EASTHUB
                                          │__EASTMAIL01
                                          └__EASTAPP01
```
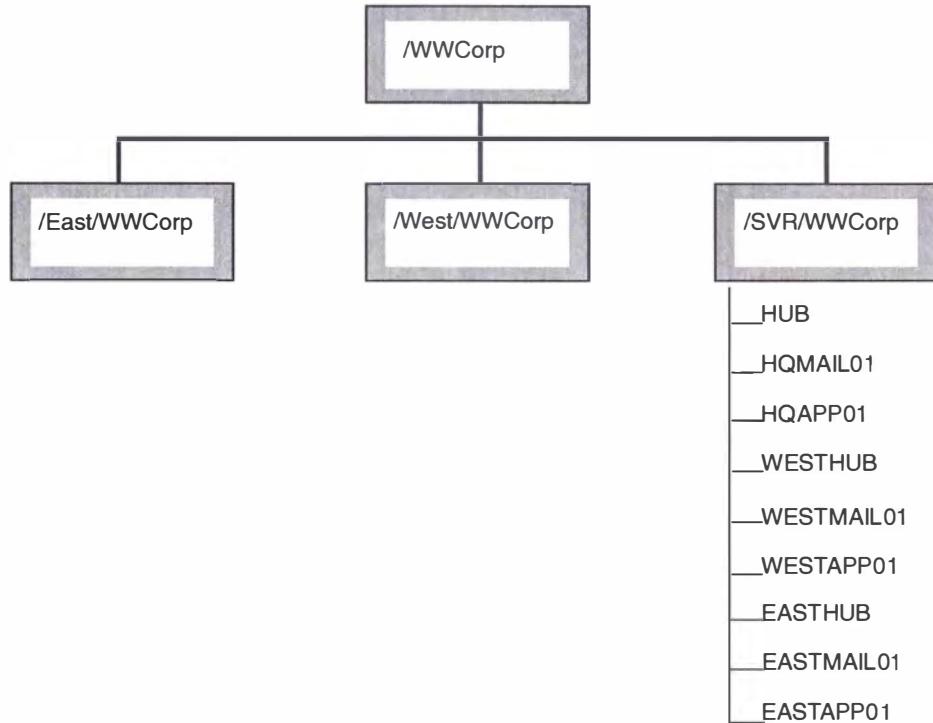
Remote Access

Worldwide Corporation has determined specific Internet access for remote employees, vendors, resellers, and customers based on their needs.

Internet access

The following Internet access will be used:

- Authenticated access for employees
- Public access Web server for vendors, resellers, and customers, including controlled access to servers, applications, and data

The following table describes types of access.

Employees	Customers	Vendors	Resellers
X.509 certificates	Anonymous access to catalog and public company information. **Future:** Username and password access to information about their own orders, for example, shipping information.	Anonymous access	Authenticated access through outside LDAP directories.

Remote users

Users at offices that do not have direct connections to the WAN can use an Internet Server Provider (ISP) to access the Domino system through a local Firewall server.

Remote users can dial in to their mail server through the local Firewall servers.

Server Configurations and Security

Worldwide Corporation has determined configurations for servers, including licensing, file structure, and server tasks. Server security has been defined as group access to servers.

Server types

The following table lists the server licenses that will be used for each of the server types.

Server Type	Server License	Rationale
Domino Mail and Internet Messaging servers	Domino Mail Server	To provide Domino and Internet mail services
Application and Web servers	Domino Utility Server	To provide custom database applications for Notes and Web clients
Hub server	Domino Enterprise server	To provide the following services: ■ Clustering ■ Partitioning

Server Configurations and Security...(continued)

File structure

The following table lists the standard file structure on the servers.

Path	Contents	Description
Domino	System files, client files	Client files will be installed for network distribution purposes.
Domino\data	Databases, general data files	Domino system databases that are required for Domino to function properly.
Domino\data\critical	Databases	Critical applications that require frequent replication.

Use the default installation file paths whenever possible to ensure standardized training and ease of support and troubleshooting.

Tip: Store Domino executables on a separate disk than Domino data for better performance.

These areas of the Domino file structure are only accessible to designated personnel for installation purposes. All other Domino data is protected by operating system security and is accessible to Domino administrators only.

Server Configurations and Security...(continued)

Configuration documents

Every Worldwide Corporation server has its own server Configuration document. This ensures that each server configuration can be modified separately and that there is a log of any changes made.

The Domino configuration database will be used for server setup to streamline and automate setup.

A Configuration document exists for each server type (for example, hub, mail, application) and is then distributed to other servers of the same type.

Domino tasks by server type

The following table lists the minimum requirements for all server configuration documents.

Domino Server Type	Recommended Tasks	
Standard services for all servers	■ Mail Router ■ Replicator ■ Indexer	■ Agent Manager ■ Administration Process ■ Event Manager ■ Statistics
Mail servers	■ Calendar Connector ■ Schedule Manager ■ HTTP for Web mail	
Application servers	■ Standard services only, no additional services	
Hub servers	■ HTTP, Both Mail and Applications ■ SMTP (Headquarters hub only)	
Web servers	■ HTTP for Web Applications	
Internet messaging servers	■ POP3 and SMTP ■ IMAP ■ LDAP ■ NNTP	

Server Configurations and Security...(continued)

Group naming for server access

Groups will be used to determine access to servers and for added security. The following naming convention will be used to identify the location and type of group:

region[global]descriptionofgroup

For example: HQAdmins or GlobalSales

Within groups, names are sorted in alphabetical order.

Deny access groups

As an added security feature, Worldwide Corporation will use four groups, which represent access denial to any Worldwide Corporation server. In each server restrictions setting, these groups will be added in the Not access server fields.

The following table describes the four groups.

Group Name	Description
Deny Access A-F	Denial for people whose surnames begin with A-F.
Deny Access G-L	Denial for people whose surnames begin with G-L.
Deny Access M-R	Denial for people whose surnames begin with M-R.
Deny Access S-Z	Denial for people whose surnames begin with S-Z.

Before deleting a user from the Domino system, add the user to one of these groups. This will ensure immediate denial to any Worldwide Corporation server.

Note: This is subject to replication of the changes throughout the domain, which will take no longer than 60 minutes.

Server Configurations and Security...(continued)

Server configuration plan

The following table describes the server configuration plan.

Standard	Requirement
Database size quotas	No database size quotas
Database names	No database naming standards
File system directory structure	Standard directory structure, for example: \Domino\Data\Global\HR1 \Domino\Data\Global\Marketing \Domino\Data\Local\Marketing \Domino\Data\Local\Dev1
Groups spanning the entire organization	One group for all server administrators, for example: GlobalAdmins Groups for specific categories of employees, for example: GlobalSales
Groups at all sites	A group for each region, for example: EastAll (for all Worldwide Corporation employees in East) One group for administrators per region, for example: WestAdmins (for all server administrators in West)

Client Configurations and Security

Worldwide Corporation has determined configurations for clients, including licensing and registration and desktop settings. Client security has been defined using security policies, including client IDs and certificates and group access to databases.

Client licenses

Client licenses will be:

- **Notes Client** for most users, all generic IDs, and any contractual or affiliate accounts
- **Domino Designer** for users who will create, modify, or design databases
- **Domino Administrator** for system administrators

Client deployment

Desktop, registration, and security policies will be used to set up users' environments.

For Internet mail, account documents will be created locally for each mail protocol. Mail will be stored in Notes Rich Text format.

Worldwide Corporation will use policy documents to create and update Location and Connection documents on workstations for dial-up users to determine where and how to locate the servers.

Client Configurations and Security...(continued)

Client IDs and certificates

The following table describes the policy regarding client IDs and certificates.

Type	Policy
Notes client IDs	■ Certify all IDs using a Domino certificate. ■ Users responsible for secure or encrypted information, such as pricing information to resellers, will hold an Internet (X.509) certificate. ■ Stored on workstations for all users and encrypted locally. ■ Copies are kept in a secure location by regional as well as corporate administrators.
Internet client browsers	■ Accept CA certificate as a trusted root. ■ Store internal signed client certificates for access to secure information.

Group naming for database access

Groups will be used to determine access to applications. The following naming conventions will be used to identify location and type of group:

region[global]databasenameaccess

For example: WestCustomerServiceReaders or GlobalPoliciesReaders

Within groups, names are sorted in alphabetical order.

File storage

Client-based data files, such as IDs, Notes.ini, and *.dsk, will be stored on the workstation for all users and encrypted locally.

Implementing the Deployment Plan

Implementation checklist

Complete these tasks to implement the Notes/Domino components of the Worldwide Corporation deployment plan.

	Task	Procedure
❑	1	Set up the first server.
❑	2	Add an administrator's workstation.
❑	3	Set up access to the Domino Directory.
❑	4	Register administrators.
❑	5	Add Organizational Units.
❑	6	Add Domino servers.
❑	7	Add Notes clients.
❑	8	Create user groups.
❑	9	Create organizational policy.
❑	10	Register users.
❑	11	Set administration preferences.
❑	12	Set up access to servers.
❑	13	Set up server logging.
❑	14	Synchronize Domino system databases throughout the domain.
❑	15	Add mobile clients.
❑	16	Route mail internally.
❑	17	Route mail to the Internet.
❑	18	Set mail controls.
❑	19	Configure the Domino Web server.
❑	20	Set up a certifying authority for SSL and S/MIME.
❑	21	Set up Internet protocols for SSL.
❑	22	Set up browser and Notes clients for SSL and S/MIME.
❑	23	Configure Internet messaging servers.
❑	24	Set up non-Domino messaging clients.

Appendix
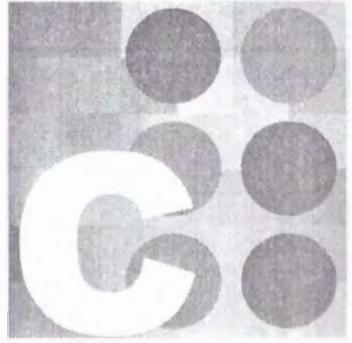
IBM Tivoli Analyzer for Lotus Domino

About the IBM Tivoli Analyzer for Lotus Domino

The IBM Tivoli Analyzer for Lotus Domino includes two integrated system-management tools: Server Health Monitor and Activity Trends. Using these tools, you can manage servers and databases, ensure better server performance, and plan for current and future needs.

The IBM Tivoli Analyzer for Lotus Domino is a separate product offering from Lotus Domino 6 and Tivoli Systems. It requires a separate license to use.

Using Server Health Monitoring

Server Health Monitoring is a method of checking overall and specific status. It provides recommendations on configuration changes that will improve the performance of the Domino server. Specifically:

- Overall server health containing recommendations for corrective actions.
- Individual component's health currently affecting server performance and in the recent past.

The process

The following diagram illustrates the process of setting up and using Server Health Monitoring.
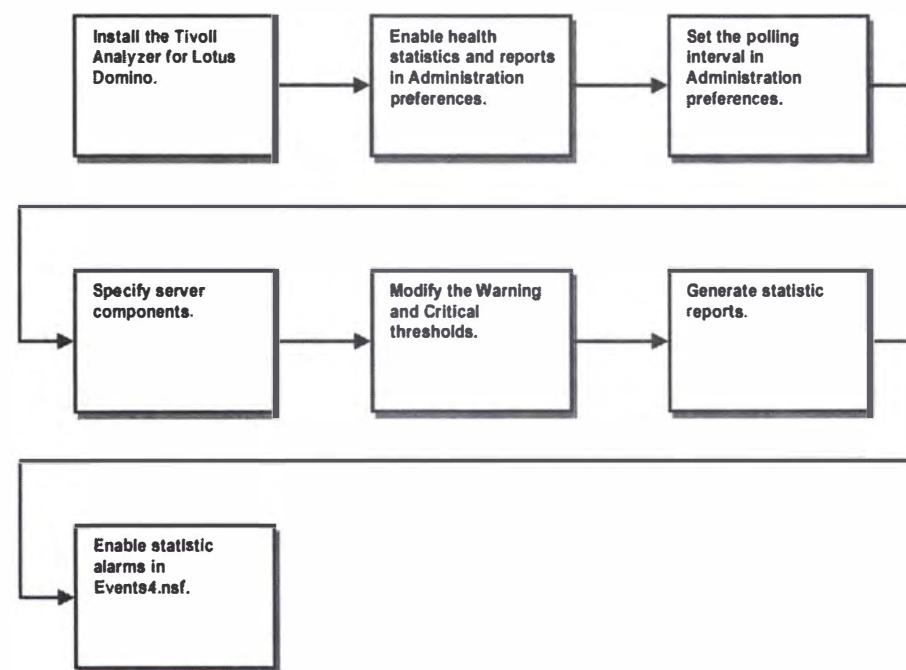
Using Server Health Monitoring...(continued)

Set the Administration preference

Follow these steps to set the Administration preference.

Step	Action
1	Choose File→Preferences→Administration preferences.
2	Select Monitoring.
3	Select the checkbox labeled Generate server health statistics and reports.
4	Select From this computer.
5	Enter 1 for Poll servers every 1 minutes.
6	Click OK.

Begin Monitoring Server Health

Follow these steps to begin monitoring server health.

Step	Action
1	Click the Server tab→Monitoring tab.
2	Click the Start button. Result: The screen becomes editable and the upper left corner of the Monitoring tab contains a toggle between two monitor display modes: ■ By State (the current status) ■ By Timeline (historical reports)
3	Select the By State display mode. Result: Once data from servers start appearing, the column labeled Hea will include a thermometer icon, indicating the assessed server health. Green thermometers indicate healthy servers. A yellow thermometer indicates that a server is approaching levels of poor performance. A red thermometer indicates that a server is failing to perform acceptably.
4	Select the By Timeline display mode to show the list of servers.
5	Click the triangle next to your server to see results presented as indices from 0 to 100, 100 meaning critical.

Using Server Health Monitoring...(continued)

View the reports

An administrator can see an assessment and recommendation for each of the components that comprise server health. Follow these steps to view Reports with more detailed information about the health of the server.

Step	Action
1	Choose **Monitoring→Display Health Reports**. **Note:** If the *About This Database* document appears, choose **File→Close** to close the document.
2	In the **Current Reports** view, click the triangle next to your server. **Result:** This displays a snapshot assessment of the current server health.
3	Double-click to open the **Overall Health** document (at top). **Result:** This document lists the following: ■ An explanation of the server's health rating. ■ Recommendations for improving server health, if applicable.
4	Click **Close** after examining the **Overall Health** document.
5	Select the **Historical Reports** view and expand your server. **Result:** This view displays a history of server health over time. Each Overall Health document contains recommendations for improving server health.

By default, historical reports are purged from the StatRep.nsf database after seven days. This default value can be changed using the following setting in the Notes.ini file:

```
HEALTH_REPORT_PURGE_AFTER_N_DAYS=n.
```

Using Server Health Monitoring...(continued)

Remove a server component

An administrator can change the output of health reports by adding or removing server components. For example, the administrator might know of a current system limitation, such as an underpowered CPU that already has a replacement on order, so he does not want to have it appear in reports. The administrator can exclude CPU performance information from the health assessment and report for that particular server.

Follow these steps to prevent the monitoring of particular Health components.

Step	Action
1	Select the **Server Components** view. **Result:** This view shows which Health components are currently selected for monitoring on each server.
2	Open the document for your server.
3	Click **Override Automatic Selections**. **Result:** The document is in edit mode so you can deselect components that do not require monitoring.
4	Click **Cancel**.

Change health monitoring thresholds

An administrator may want to lower a threshold so that a poor-health rating is triggered. For example, she may know that the company's machines all need a memory upgrade within a year therefore she wants plenty of advance notice before critical issues come up so there is enough time to order the memory.

Follow these steps to change Thresholds by platform.

| Step	Action
1	Select the **Index Thresholds** view.
2	Click the triangle next to any platform not used in class to expand the list.
3	Highlight **Memory Utilization** and click **Edit Threshold Document**.
4	Change the field labeled **Warning Threshold** to a lower value.
5	Click **Restore defaults**. **Result:** The thresholds are restored to the default values.
6	Click **Cancel**.

Using Activity Trends

Activity Trends collects activity statistics on a Domino server and aids administrators with preventative maintenance that helps avert current and future server performance problems.

Activity Trends has three components:

- Data Collection - performed by the activity trends server task.
- Data exploration - through a user defined chart of statistics at the server, database, or user level. The statistics can be for a single server or group of servers.
- Resource balancing - analyzes server resource utilization and provides recommendations for balancing the servers based on predefined resource goals.

The process

The following diagram illustrates the process of setting up and using Activity Trends.
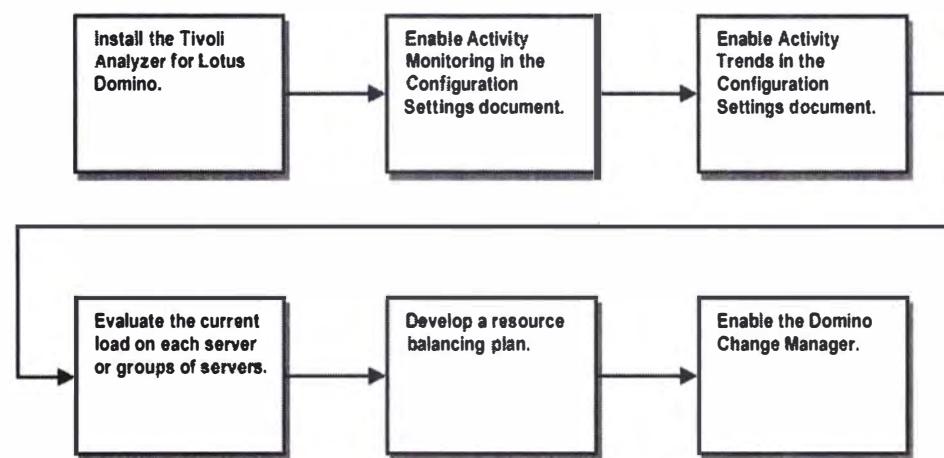
Using Activity Trends...(continued)

Configuring activity trends

In the **Configuration Settings** document→**Activity Logging** tab, there are two sub-tabs: **Activity Logging** and **Activity Trends**.

- **Activity Logging sub-tab:** Determines how frequently to log activity session data. The frequency interval is called a checkpoint.
- **Activity Trends sub-tab:** Controls the collection timing of activity data for trends analysis. The following table describes these fields.

Field	Description
Enable activity trends collector	Select **Yes** to run the Activity Trends Collector task. This is required for the Advanced Monitoring tool.
Activity trends collector database path	The name of the database where Activity Trends data is stored.
Time of day to run activity trends collector	Enter a time. Schedule the Activity Trends Collector to run after the Catalog task completes.
Days of the week to collect observations	Select the days to collect observations. An observation period is 24 hours from midnight to midnight.
Trends cardinal interval	Determines how many recent observations to weight more heavily than older observations. For example, entering 5 in this field causes the five most recent observations to be weighted more heavily than previous observations.
Observation time bucket (seconds)	Default is 300 seconds (5 minutes). The day is divided into 5-minute blocks of time to show when the activity occurred.
Maximum observation list time	Default is 366 (1 year + 1 day or 1 leap year). Amount of data that is kept in the Trends database before it is overwritten with new data.
Trends history interval	Select the desired frequency.

Using Activity Trends...*(continued)*

Defining servers and statistics to track

Follow these steps to create a server group and set up statistics.

Step	Action
1	In the **Configuration Settings** document, enable **Activity Logging** and **Activity Trends** for either: ■ Your server ■ [All Servers] **Note:** In order to retrieve activity data, Activity Trends must be enabled for at least one 24 hour period, midnight to midnight.
2	Click **Server** tab→**Performance** tab.
3	Click **Activity Trends**→**Latest**→**Database**.
4	Click the plus sign under **Saved server group configurations**.
5	Select your server and click **Add**.
6	Select a different server and click **Add**.
7	Click **Done**.
8	Click [icon] and choose **Save as**.
9	Enter a descriptive name for the server group and click **OK**.
10	Click the plus sign under **Saved statistics groups**. **Result:** A list of database statistics appear.
11	Use the far left column in the dialog box to select the following statistics: ■ **BytesFromServer** ■ **Connects** ■ **DiskSpaceFileSizeGrowthRate** ■ **Users**
12	Click [icon] and choose **Save as**.
13	Enter a descriptive name and click **OK**.

Using Activity Trends..._(continued)_

Evaluating sever statistics

Follow these steps to evaluate server statistics.

Step	Action
1	On the **Activity Trends** screen, click the color-coded blocks under **Sort** in the upper right. **Result:** The chart bars appear in descending sort order based on the values of the selected statistic.
2	Click one of the gray blocks under **Type**, then click it again. **Result:** The chart toggles between displaying the trend and the last observation.
3	Click one of the gray blocks under **Period**, then click it again. **Result:** The chart toggles between displaying the trend for the prime observation period and the trend for the 24-hour period.
4	In the chart, mouse over each bar for one database. **Result:** A pop-up message box displays the following: ■ The server and database name ■ The trended value of the statistic ■ An instruction to click the bar to see users who have used this database
5	In the **Navigator** pane, click **Resource Balancing**. **Result:** The automatic Resource Balancing interface appears
6	Click **Current Profile** and mouse over the bar. **Result:** A pop-up message box displays the following three components: ■ The red component is the sum of transactions on the databases on that server that are in the top 30% of load in the system. ■ The green component is the middle 30 to 70%. ■ The blue component is the lowest 30%.

For more information on using Predictive Analysis and Resource Balancing, please see the following documents in IBM Lotus Domino Administrator 6 Help:

■ _IBM Tivoli Analyzer for Lotus Domino_

■ _Activity Trends_

■ _Understanding how Activity Trends collect data_

■ _Domino Change Manager_

Using Activity Trends...(continued)

Exploring the Activity Trends database

The Activity Trends database records statistics on the activity of users (clients) against the databases on the server. Follow these steps to examine the Activity Trends database, and answer the questions.

Step	Action
1	From **Domino Administrator**, click the **Server** tab→**Analysis** tab→ **Activity Trends** view.
2	The names of the three main categories in the Navigator pane are: ■ Trends ■ Observations ■ History
3	In the **Trends** category, select the **Users** section→**Connections** view to see which databases have had the most activity (indicated by the green diamonds).
4	Select the **History** category. The difference between the **Users** view and the **Prime Shift** view is: ■ **Users:** Trends during all times ■ **Prime Shift:** Trends during peak hours as defined in the Configuration Settings document.
5	Select the **Observations** category→**Databases** section→**Inventory** view to observe which databases should be compacted (% used less than 90%).

Appendix

D
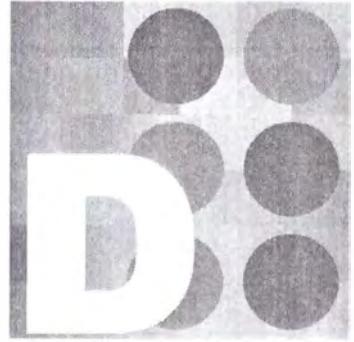
Additional Reference Material

About This Appendix

This appendix includes the additional features of IBM Lotus Notes and Domino 6 that are not covered in the course, but may be useful as background information for those students who have not yet attended the *Administering IBM Lotus Domino 6: Building the Infrastructure* course. For complete details, refer to Lotus Domino Administrator 6 Help and the *Administering IBM Lotus Domino 6: Building the Infrastructure* course.

This appendix contains the following topics:

- Facts about the Administration Process
- Server administration levels
- Policy management
- Differences in Notes/Domino 6 and Notes/Domino 6.0.1
- Server crash problem resolution and recovery
- Regional Organizational Unit certifiers for users

Administration Process

The **Administration Process** is a program that automates administrative tasks.

Examples

The Administration Process automates the following types of tasks described in the table below.

Task	Examples
Name-management	■ Rename person ■ Rename group ■ Delete person ■ Delete group ■ Delete server name ■ Recertify users ■ Store Internet certificate
Mail file-management	■ Delete a mail file ■ Move a mail file
Server document-management	■ Store CPU count ■ Store platform ■ Place network protocol information in Server document
Roaming user management	■ Roaming user setup ■ Move roaming users ■ Change a non-roaming user to roaming ■ Change a roaming user to non-roaming
User mail file management	Store user's Notes version and client platform information
Replica management	■ Create replica ■ Move replica ■ Delete replicas

Administration Process...(continued)

Components of the Administration Process

Maintaining the Administration Process requires monitoring key components. The following table lists the components of the Administration Process.

Component	Description
Administration Process task	Posts and responds to requests in the Administration Requests database. Replicas of the Administration Requests database distribute requests made on one server to other servers in the domain or distributes mail requests to servers in other domains.
Administration Server	Server responsible for completing the Administration Process request.
Administration Requests database (Admin4.nsf)	Every server in the domain stores a replica of the Administration Requests database. If the Administration Requests database does not exist, the server creates a replica stub of the Administration Requests database and waits for it to be initialized from the Administration Server in the domain.
Certification log (CertLog.nsf)	The Administration Process requires the database to perform name changes and recertifications. This log contains a permanent record of how servers and users are registered, including information about the certifier ID. The Certification log also contains messages that describe the results of recertification requests that the Administration Process is processing.

Administration Process...(continued)

Administration Process best practices

The following are recommendations for using the Administration Process effectively.

- Administration Process (AdminP) task:
  - Do not initiate Administration Process requests from the server console unless immediate action is required.
  - Verify that the requestor has access to do manually what he is requesting through the Administration Process.

- Administration Requests database (Admin4.nsf):
  - Select the **Pending Administrator Approval** view.
  - Select the **Errors** view. (Reasons are detailed in the Error document.)

- Verify that all Certificate documents, with the appropriate key, replicate to all Domino Directories in the domain.
- Replicate the Domino Directory and the Administration Requests database with all servers in the domain on regularly scheduled intervals.

Creating Regional Organizational Unit Certifiers for Users

Creating an Organizational Unit certifier

Follow the steps below to create an Organizational Unit certifier.

Step	Action
1	From **Domino Administrator**, select the server to administer.
2	Click the **Configuration** tab.
3	From the **Tools** pane, choose **Registration→Organizational Unit**.
4	In the **Choose a Certifier** dialog box, perform the following: a. Click **Server**, select the appropriate server, and click **OK**. b. Select **Supply certifier ID and password**. c. Click **Certifier ID**, select a certifier ID file, and click **Open**. d. Click **OK**.
5	Enter the certifier ID password, and click **OK**.
6	On the **Certifier Recovery Information** warning, click **OK**.
7	On the **Register Organizational Unit Certifier** dialog box, perform the following: a. Click **Registration Server**, select a registration server, and click **OK**. b. Click **Set ID File**, enter the new certifier ID file name, and click **OK**. c. Enter the Organizational Unit name. d. Select a **Password** quality, and enter a certifier password. e. Enter the name of an administrator or group of administrators to receive certification requests. f. Click **Register**.
8	Click **OK**.

Distributing Administrative Responsibilities

Notes/Domino 6 permits assigning different levels of administrator access to different groups of administrators. This places tighter controls on what tasks administrators can perform on a particular server.

Administration levels

The following table outlines administration levels and the associated rights found in the **Server** document→**Security** tab→**Administrators** section.

Server Document Field	Description of Access
Restricted System Administrator	Can issue restricted subset of OS commands defined in the Restricted System Commands field.
System Administrator	Can issue any OS command using the Domino Server Controller.
View only Administrators	Same access as System Administrator, plus issue a safe subset of server console commands that do not affect server operation. For example, Show Tasks.
Full Remote Console Administrators	Same access as System Administrator, plus issue any server console command.
Database Administrators	Same access as Full Remote Console Administrators, plus perform database maintenance tasks such as: ■ Specify the administration server for a database. ■ Create, compact, and delete databases. ■ Maintain full-text indexes, folder, database and directory links, and certain database options.
Administrators	Same access as Database Administrators, plus: ■ Track mail messages. ■ Use the Domino Web Administrator. ■ Create databases, replicas, and master templates.
Full Access administrators	Same access as Administrators, plus: ■ Manager access to all databases on the server ■ All programmability rights ■ All passthru rights **Note:** This level is similar to **root** level access on UNIX.

Distributing Administrative Responsibilities…*(continued)*

Best practices for Full Access administrators

This level is required only for exceptional system maintenance and problem resolution. This access level should only be given to trustworthy people who truly need access to all databases on the server. Given the powerful level of access that this setting allows, the following table lists recommendations for this field.

Recommendation	Description
Leave the field blank	No administrator has Full Access rights.
Create a special Full Access administrator ID file	For example, create an ID for `Full Admin/ Sales/WWCorp` and use that name in the Full Access administrators field. Consider requiring multiple passwords on this ID file. Administrators must login with or switch to this user ID to gain this level of access.
Disable Full Access administrators in the Notes.ini file	Set `SECURE_DISABLE_FULLADMIN = 1`. This causes the server to ignore any values in the Full Access administrators field in the Server document. When access is required, remove the line from the file and restart the server.

Policy-Based Management

Policies can control many user and administrative functions. An administrator can enforce Notes/Domino policies of various types and apply them to various groupings of users.

Key concepts regarding Policies

Here are key concepts to understand regarding Policy management:

- A policy is the Policy document and its associated Settings documents. Each Policy document contains pointers to selected settings documents. This combination of the Policy document and its Settings documents is what constitutes one policy.
- A policy can be either:
    - Organizational, meaning it applies to an organization or an OU.
    - Explicit, meaning it applies to specific users and may include users from different OUs.
- Policies can apply to various sets of users. They can apply to an entire organization, an OU, a group of users, or even one user. Multiple policies can apply to the same user and these can contain a contradictory value for the same setting. A precedence system determines which setting a user gets.
    - In general, a policy that is more specific to a given user takes precedence over a more general policy. For example, settings in an explicit policy take precedence over the corresponding settings in an organizational policy.
    - An Administrator can change this precedence scheme by selecting Inherit or Enforce for individual settings. An Administrator can also make the entire policy an Exception policy, meaning that its settings will take precedence over corresponding settings in all ancestor policies.

Policy-Based Management...(continued)

What are Settings documents?

There are numerous settings an administrator can specify in five types of Policy Settings documents. The following table shows examples of settings in each type of Settings document.

Type of Settings Document	Description
Registration	Specifies default settings on the User Registration dialog box.
Setup	Specifies numerous types of settings to implement during workstation setup.
Desktop	Specifies numerous types of settings to implement on an ongoing basis. For example: ■ A custom corporate Welcome Page ■ Smart Upgrade options
Archiving	Specifies what documents or attachments to archive from mail files and where to place the archive. Server-to-server archiving can archive all mail files to central server.
Security	Specifies controls on Notes and Internet passwords, as well as the Execution Control List (ECL).

How to Create a Settings Document

A corporation may have several Settings documents of each type: Archiving, Desktop, Registration, Security, and Setup. For example, with de-centralized administration, each region of a corporation would need different:

- Registration Settings documents to specify a local Registration server and regional Organizational Unit certifier.
- Desktop Settings documents to specify standard databases on local servers.

Creating a Settings document

Follow these steps to create a Settings document.

Step	Action
1	From **Domino Administrator,** click the **People & Groups** tab→ **Domino Directories** section→ *Your* **Directory** section→ **Settings** view.
2	Click **Add Settings**, then choose the type of Settings document from the drop-down menu.
3	If prompted, click **Yes** if all servers are running Release 4.67a or higher.
4	For **Name**, enter a descriptive name to easily identify the purpose of this Settings document.
5	Complete the appropriate fields on the tabs specific for the selected Settings document type. For complete details on each tab and field, refer to pop-up field help or the Lotus Domino Administrator 6 Help topic *Creating policies*.
6	Click **Save & Close**.

How to Create a Policy Document

Most users in the organization will have the same settings, for example, a strong password quality. An Organizational policy enforces this strong password quality setting during user registration. If certain users do not need a password, an Explicit policy can override the password setting.

Creating a policy

Follow these steps to create a policy.

| Step	Action
1	From **Domino Administrator**, click the **People & Groups** tab→ **Domino Directories** section→ *Your* **Directory** section→ **Policies** view.
2	Click **Add Policy**.
3	If prompted, click **Yes** if all servers are running Release 4.67a or higher.
4	For **Policy Name**, enter the organization name (or Organizational Unit name).
5	For **Policy Type**, select either **Explicit** or **Organizational**.
6	For the **Registration** field, do one of the following: ■ Select an existing Registration Settings document. ■ Click **New** in that row to create a new Registration Settings document. Refer to the *Creating a Settings document* procedure earlier in this section.
7	Repeat Step 6 to complete the following fields: ■ Setup ■ Archiving ■ Desktop ■ Security
8	Click **Save & Close**.

Applying a Policy to Users

Settings are applied statically or dynamically depending on the type of settings.

Static vs. dynamic settings

Below are examples of the difference between static and dynamic settings.

Static Settings

■ Set during user registration as highlighted in the following figure.
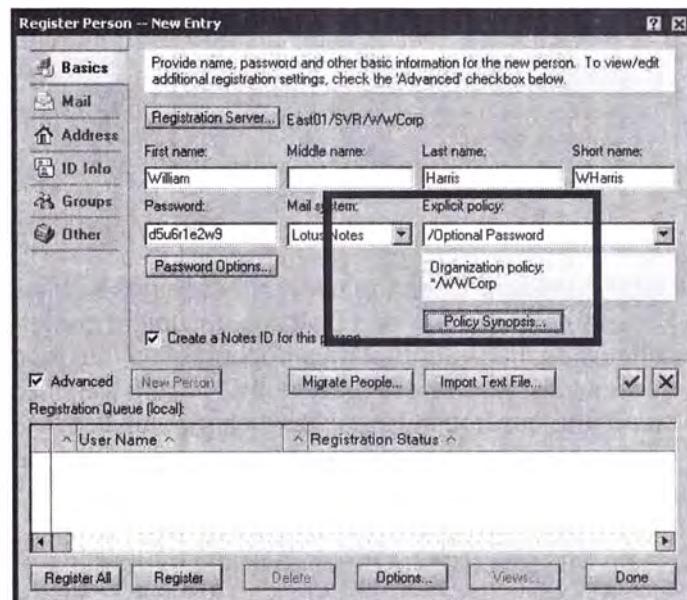
Note: Click **Policy Synopsis** to see a summary of what settings will be applied to the user based on the selected policies.

Applying a Policy to Users...(continued)

Static vs. dynamic settings...

■ Set during workstation setup. The following figures show a Setup Settings document and the corresponding fields in a user's Location document that are set during initial workstation setup.

Dynamic Settings

■ Set dynamically when the user authenticates with a server in the domain. For example, the Desktop Settings document contains many of the same settings as the Setup Settings document so that these settings can change dynamically, whenever a user authenticates with the server. If a user changes one of the desktop settings, it will change back to the value specified in the Desktop Settings document, at the next authentication.

Viewing Policies and Assigning Policies to Existing Users

There are various methods to assign explicit policies and view the effective policy of existing users. The effective policy is the combined collection of settings from different policies that apply to a user.

Assigning an explicit policy to existing users

The Tools pane in Domino Administrator provides two methods to assign an explicit policy to an existing user. Both methods set the explicit policy in the Person document(s):

■ In the **People** view, by choosing **People→Assign Policy**
■ In the **Groups** view, by choosing **Groups→Assign Policy**

Displaying an effective policy for existing users

There are two methods to display effective policies:

■ In the **People** view, by selecting a Person document and choosing **Policy Synopsis**.
■ On the **Configuration** tab, by selecting either:
  ■ **Polices→by Settings** view
  ■ **Polices→by Hierarchy** view

Additional resources

For more information on policies, refer to the following resources:

■ The *Administering IBM Lotus Domino 6: Building the Infrastructure* course
■ Lotus Domino Administrator 6 Help topics
  ■ *Policies*
  ■ *Organizational and explicit policies*
  ■ *Policy hierarchy and the effective policy*
  ■ *Planning and assigning policies*
 ■ *Creating policies*
  ■ *Managing policies*

Point Release Changes

This course was developed and tested using IBM Lotus Domino 6.0.1. If using IBM Lotus Domino 6, you will notice some changes in the user interface, many of which are noted throughout this guide.

Domino Directory outline view

The Domino Directory outline view changed in Domino 6.0.1. to match more closely the organization of documents on the Domino Administrator Configuration tab. Below are examples of the Domino Directory outlined in both releases.
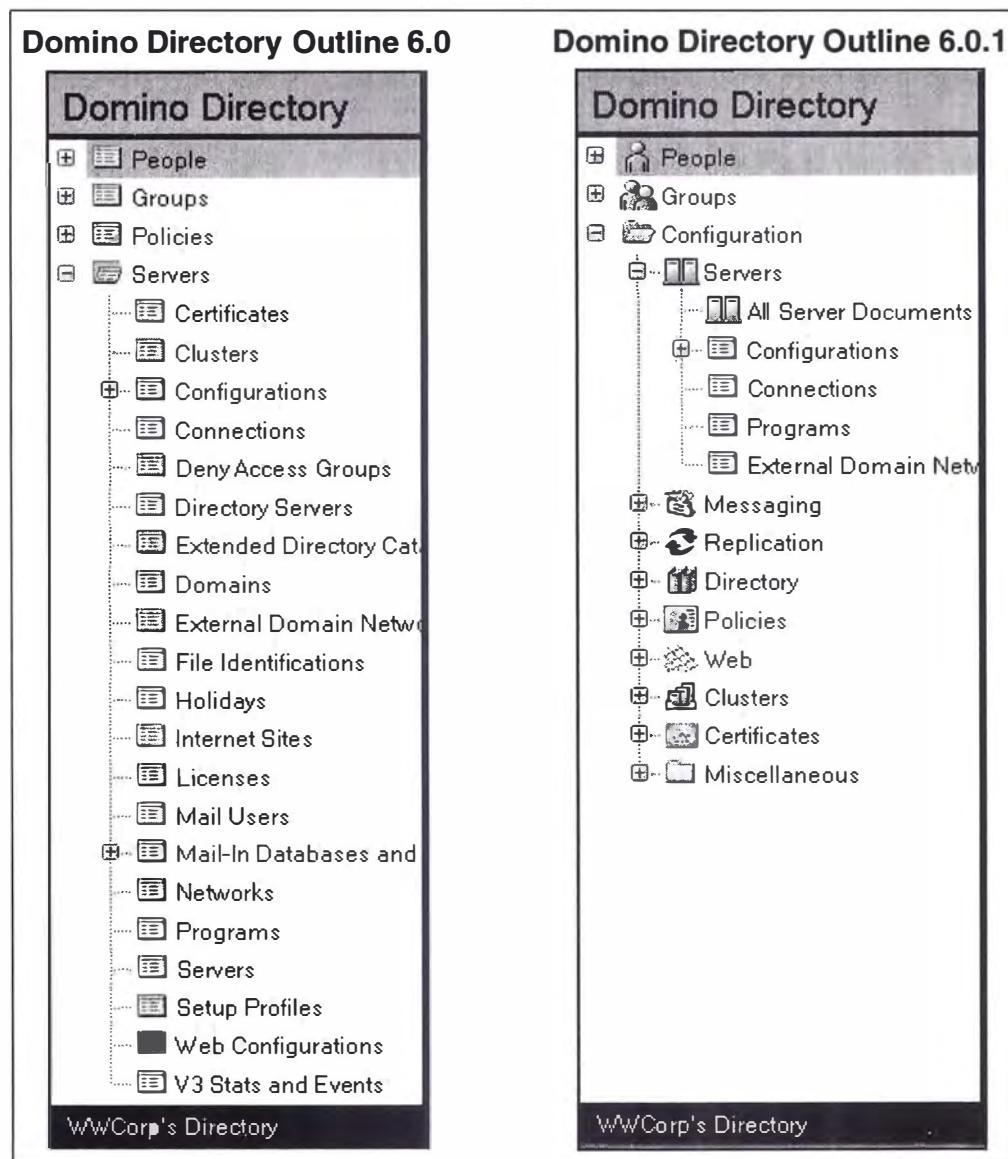
Troubleshooting a Server Crash

The following checklists contain information that you should collect in the event of a server crash. Lotus Support Services will require this information when needing assistance in troubleshooting a server crash.

Collecting system information

Follow these steps to collect the necessary system information.

Step	Action
1	Collect the following system information: ■ Network type and version; network protocol(s) and version(s) (including file dates) ■ Server hardware ■ Operating system version ■ System-level patches ■ Domino server version ■ Names of API programs and tasks, gateways, backup programs, executable scripts, third-party programs, and so on
2	Note changes to these elements of the Domino environment. If possible, revert to the previous configuration to see if the problem still occurs: ■ Network changes (new Router or upgrade to network software or firmware) ■ Network interface card (NIC) changes (new NIC, or old NIC software driver and new operating system) ■ Operating system changes (upgrade of operating system or new patch) ■ Domino changes (upgrade to a new release of Domino or migration of new users) ■ Other hardware or software changes

Troubleshooting a Server Crash...(continued)

Reviewing crash files

Follow these steps to review crash files.

Step	Action
1	If a NSD log or UNIX CORE file was created: ■ Verify the time and date of the file. This should coincide with the time and date of the crash. ■ Rename and save the NSD log or UNIX CORE file so that Domino does not overwrite it during a future crash. **Note:** If a crash does not produce a NSD log or UNIX CORE file, the server may be out of disk space or memory. Generate a Memory.dmp to resolve memory problems.
2	Check the **Miscellaneous Events** view in the Domino Server Log. ■ Record all entries that occurred immediately before and after the crash. ■ Look for an NSF file in the entry. This file may indicate where the crash occurred. If a particular database appears to have caused the crash, check the replication history of that database for additional information.
3	Make a copy of the Notes.ini file.
4	Collect these Configuration files: ■ NetWare ■ Net.cfg ■ Autoexec.ncf ■ Startup.ncf ■ Windows ■ Windows diagnostics file
5	Check the Lotus Support Services Web Site at http://www-3.ibm.com/software/lotus/support/ for any error messages found or other problem resolutions.

Troubleshooting a Server Crash...(continued)

Documenting crash information

Follow these steps to document crash information.

Step	Action
1	If possible, capture the last screen displayed on the console. **Note:** Press ALT+PRINT SCREEN on Windows systems to capture the server console window.
2	If the last message on the console starts with the word **Panic,** record the entire message for Lotus Support.
3	To review information about the server crash, click the **Server** tab→ **Analysis** tab→**Domino Server Log** section→**Miscellaneous Events** view.

Eliminating potential causes

To eliminate specific tasks or ports suspected to be the problem, open the Notes.ini file in any text editor, and remove server tasks and ports from the following lines for the purposes of troubleshooting:

- ServerTasks
- ServerTasksAt
- Ports
- DisabledPorts

Analyzing a Crash File

Notes System Dump (NSD) files can help determine the cause of a server crash. A program called NSD (Nsd.exe for W32 platforms, Nsd.sh for Unix platforms) creates a crash file in the Domino data directory. The file contains information about the tasks running when the crash occurred as well as general system information.

This is just a brief look at a crash file. Analyzing an NSD log file is a lengthy and detailed subject requiring extensive knowledge of the Notes/Domino architecture.

Sample NSD log file

This sample NSD log file occurred after a server crash as a result of storing multiple replicas of a database on one server in a cluster. The server crash occurred regularly, in various server processes, and was sometimes accompanied by one of the following memcheck errors in the NSD output.

```
ERROR: Unaligned VBLOCK BLK_NSF_POOL[27,3367]
ERROR (31): Invalid POOL (0x0252) free size 187 @936944

###########################################################
########### thread 16/47 :: server, pid=909, lwp=16 ##########
###########################################################
[1] eef39afc lwp_cond_wait (ed7f10a0, ed7f1088, ed7f1078)
[2] ef7910e4 _ti_sleep (1e, 41, 6c15c, 0, 0, 0) + b4
[3] ef077420 fatal_error (a, ef65ef84, ef654d8c, ed7f1160,
ed7f1e84, ed7f1e3c) + 29c
[4] ef79006c sigacthandler (a, ed7f1738, ed7f1480, 28,
ed7f1e84, ed7f13e0) + 658
[5] ef07b0ec OSLockWriteSem (eac51bbb, 11, 38d, eaaddf48, 1d7f,
3) + 20
[6] ef201298 BUFDbFlush (eaef4198, ffff, ef739008, ef7387f8,
ea6e2d24, eaef4554) + 128
[7] ef1a0b8c DbFlushExtended (eaef4198, 0, 0, ef654d8c, 0, 0) +
3c0
[8] ef172350 FlushDB (0, ed7f1a4c, 266, 1, ef1722f4, ed7f1ac8)
+ 5c
[9] ef171ec4 StateMachine (ecfa4510, ef664cd4, ef664cc4,
ef664cc8, ef664cd0, 1) + 1d0
[10] ef16fb74 DbAgeDbCache (ecf9eeb8, 1, ef7387f8, ef73a68c,
ef654d8c, ecf9eec4) + 430
[11] ef16f710 NSFProcessDbCache (0, ef73a68c, 37, 7cb38,
ee004e00, 0) + cc
[12] 00028258 DbCacheTask (d920, 1, d920, 1, 77800, ee002ab8) +
1c0
[13] 0001f20c Scheduler (0, 77b34, fc00, 7718c, 2, ffff) + 1ec
[14] ef08c208 ThreadWrapper (0, 1f020, 0, 70646e65, 0, 0) + 6c
[15] ef7925dc _thread_start (0, 0, 0, 0, 0, 0) + 340
```

Analyzing a Crash File...(continued)

Important information in the crash file

The crash file contains a lot of important information, such as:

■ The server task where the crash occurred, in this case, "server"
■ Error messages
■ A "fatal_error" code

Lotus Support will require this information to help troubleshoot the server crash.

Appendix
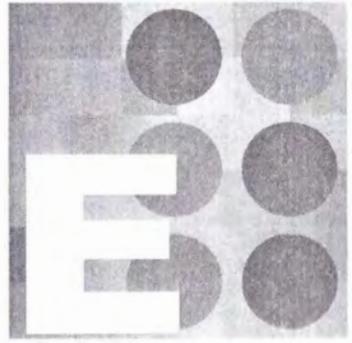
Bibliography

About This Appendix

The appendix contains references to documentation, White Papers, Web sites, Redbooks and other resources containing information related to managing servers and users.

General References

Redpapers

Refer to the following Redbooks/Redpapers available on http://www.redbooks.ibm.com:

- *Upgrading to Domino 6: Performance Benefits*
- *Upgrading to Lotus Notes and Domino 6*

LDD Today articles

Refer to the following LDD Today articles available on the Lotus Developer Domain Web site at http://www-10.lotus.com/ldd.

- *What's cool about the Notes/Domino 6 UI*
- *Early adoption of Notes/Domino 6 at IBM*
- *A sampling of new Domino 6 variables*

References for Lesson 1: Managing Users and Groups

Shared mail

For more information on shared mail and unlinking shared mail files, refer to the following Lotus Domino Administrator 6 Help topics:

■ *Shared mail overview*
■ *How shared mail works*
■ *Setting up shared mail databases*
■ *Managing a shared mail database*

Administration Process

For more information on configuring the Administration Process, refer to the following Lotus Domino Administrator 6 Help topics:

■ *Setting up the Administration Process*
■ *The Administration Process*

Requesting a name change

Users can request a name change via e-mail. The name change is completed via mail actions by the administrator and the user. For more information, refer to the Lotus Notes 6 Help topic *Requesting a new User Name*.

Delegating mail access

For information on delegating mail, refer to the Lotus Notes 6 Help topic *Delegating access to your mail database*.

Using alternate an language/name

For information on using an alternate language/name, refer to the Lotus Domino Administrator 6 Help topic *Adding an alternate language and name to a user ID*.

References for Lesson 2: Managing Notes and Non-Notes Clients

Using trusted directories to authenticate users

Web users must be listed in the Domino Directory or a trusted directory in order to access restricted resources on the Web server.

Refer to the Lotus Domino Administrator 6 Help topic *Directory Assistance* for more information on setting up Directory Assistance to authenticate via a trusted directory.

References for Lesson 3: Managing Servers

Backup utilities

Backup utilities are available for Domino 6. For more information on backup utilities, refer to the following Web sites:

■ Lotus Developer Domain, http://www-10.lotus.com/ldd

■ IBM Tivoli Software, http://www.ibm.com/software/tivoli

Transaction logging

Refer to the LDD Today articles available on the Lotus Developer Domain Web Site at http://www-10.lotus.com/ldd:

■ *Assessing the impacts of new transaction logging features*

■ *More on Domino 6 transaction logging*

Running Fixup

For more information on when to run Fixup, refer to **Technote 183377** *When Should FIXUP Be Run on a Database?* on the Lotus Support Services Web Site, http://www-3.ibm.com/software/lotus/support/.

Activity logging and Activity Trends

For more information about activity logging information, refer to the Lotus Domino Administrator 6 Help topic *The information in the log file*.

Refer to *Appendix C: IBM Tivoli Analyzer for Lotus Domino* for more information.

Note: IBM Tivoli Analyzer for Domino is a separate product and requires a separate license.

Automating server tasks

Refer to the following Lotus Domino Administrator 6 Help topics for complete details on command line options for the Updall and Compact server tasks:

■ *Updall options*

■ *Compact options*

References for Lesson 4: Updating Servers

Cross-certification

For more information on cross-certification, refer to the following Lotus Domino Administrator 6 Help topics:

■ *Issuing cross-certificates*
■ *Examples of cross-certification*

Authenticating with another organization

For more information on the methods for cross-certification, refer to the references in the following table.

Cross-certification Method	Lotus Domino Administrator 6 Help Reference
Cross-certifying by electronic mail	*Adding a Notes cross-certificate for IDs by Notes mail*
Cross-certifying by disk media	*Adding a Notes cross-certificate for IDs by postal service*
Cross-certifying at the time of connection	*Adding a Notes or Internet cross-certificate on demand*

Decommissioning a Domain Search server

For more information, refer to the Lotus Domino Administrator 6 Help topic *Decommissioning a Domain Search server*.

References for Lesson 5: Setting Up Server Monitoring

LDD Today articles

Refer to the following LDD Today articles on the Lotus Developer Domain Web site, http://www-10.lotus.com/ldd:

■ *Start using Domino 6 Server Health Monitoring now!*

■ *Jim Rouleau on Domino 6 server availability*

■ *Rules-of-thumb for monitoring Windows NT/2000 and Domino statistics*

■ *The new Domino 6 NotesBench workloads: Heavier by request!*

■ *Analyzing system resources with platform statistics*

References for Lesson 6: Monitoring Server Performance

Using Domino Web Administrator

Refer to the Lotus Domino Administrator 6 Help topic *Administrator roles in the Web Administrator* for more information on using roles to limit an administrator's access in Domino Web Administrator.

Additional resources

For more information on monitoring server performance, refer to the following Lotus Domino Administrator 6 Help topics:

- *Tools for measuring server performance*
- *Improving Domino server performance*
- *Improving Database and Domino Directory performance*
- *Server.Load*

LDD Today articles

Refer to the following LDD Today articles on the Lotus Developer Domain Web site, http://www-10.lotus.com/ldd:

- *Agent variables*
- *Domino 6 performance features*
- *Domino 6 performs!*

References for Lesson 7: Resolving Server Problems

Solving server access problems

Use any of the following additional resources:

- View the Domino Server Log (Log.nsf) for error messages and problems.
- Refer to the following topics in Lotus Domino Administrator 6 Help:
  - *Checking the Domino Directory for errors that affect server access*
  - *Checking the server ID for a problem that affects server access*
- Lookup any error messages on the Lotus Support Services Web Site at http://www-3.ibm.com/software/lotus/support/.

Solving Administration Process problems

Use any of the following additional resources:

- Check the following views in the Administration Requests database for possible reasons the request failed:
  - *All Errors by Date*
  - *All Errors by Server*
- Refer to the following topics in Lotus Domino Administrator 6 Help:
  - *Administration Process -- Problems and error messages*
  - *How to troubleshoot the Administration Process*
  - *Administration request messages*
- Look up any error messages on the Lotus Support Services Web Site at http://www-3.ibm.com/software/lotus/support/.

References for Lesson 7: Resolving Server Problems...(continued)

Solving connection problems

Use any of the following additional resources:

- View the Domino Server Log (Log.nsf) for error messages and problems.
- Refer to the following documents in Lotus Domino Administrator 6 Help:
    - *Modems and remote connections -- Troubleshooting*
    - *Network connections over NRPC -- Troubleshooting*
    - *Network dialup connections -- Troubleshooting*
- From the Lotus Developer Domain Sandbox Web site at http://www-10.lotus.com/ldd/sandbox.nsf:
    - Download the Notes Connect diagnostic tool, NPing.exe, or the Java-based diagnostic tool, JPing.exe.
    - Refer to the LDD Today article titled *Testing TCP/IP connection with NotesCONNECT.*
- Look up any error messages on the Lotus Support Services Web Site at http://www-3.ibm.com/software/lotus/support/.
- If recent changes to a server include host name, IP address, or port names, it may be necessary to clear some system fields in the Server document. Refer to the following technotes on the Lotus Support Services Web site:
    - *How to Disable Server Cache of the Last Known Address*
    - *Where are Server Addresses Cached in Notes and Domino?*

References for Lesson 7: Resolving Server Problems...(continued)

Solving Agent Manager problems

Use any of the following additional resources:

- Set the Notes.ini file setting (Log_AgentManager=1), then view the Domino Server Log (Log.nsf) for error messages and problems.
- View the Agent Log for a particular agent.
- Refer to the following topics in Lotus Domino Administrator 6 Help:
  - *Tools for troubleshooting Agent Manager and agents*
  - *Agent manager and agents -- Problems and error messages*
- Refer to the Lotus Domino Designer 6 Help topic *Security for agents on servers and the Web*.
- Look up any error messages on the Lotus Support Services Web Site at http://www-3.ibm.com/software/lotus/support/.
- Refer to the LDD Today article titled, *Troubleshooting agents in Notes/Domino 5 and 6* available on the Lotus Developer Domain Web site at http://www-10lotus.com/ldd.

Solving replication problems

Use any of the following additional resources:

- Set the Notes.ini file setting (Log_Replication=1, 2, 3 or 4), then view the Domino Log file (Log.nsf) for error messages and problems.
- Refer to the following topics in Lotus Domino Administrator 6 Help:
  - *Tools for troubleshooting replication*
  - *Replication -- Problems and error messages*
- Look up any error messages on the Lotus Support Services Web site at http://www-3.ibm.com/software/lotus/support/.
- Search for technotes on the Lotus Support Services Web site with the following keywords:
  - replication purge interval
  - replication database ACL
  - replication settings
  - replication readers field
  - replication history
  - replication conflict

References for Lesson 7: Resolving Server Problems...(continued)

Minimizing replication and save conflicts

Use any of the following additional resources:

■ For more information on document locking, refer to the following additional resources:

■ How to enable document locking: *Document Locking* in Lotus Domino Designer 6 Help

■ How users lock a document: *Locking Documents* in Lotus Notes 6 Help

■ For more information on merging replication conflicts, refer to the Lotus Domino Designer 6 Help topic *Forms Properties box - Form Info tab‡Conflict Handling*.

Troubleshooting a server crash

Refer to the following White Papers found on http://www-3.ibm.com/software/lotus/support/:

■ *Troubleshooting Notes/Domino Server Crashes*
■ *Troubleshooting Notes/Domino Server Performance*

Also refer to the following Lotus Domino Administrator 6 Help topics:

■ **How to troubleshoot server crashes**
■ **Server crashes -- Problems and error messages**
■ **Fault recovery**

Lookup any error messages on the Lotus Support Services Web site at www.lotus.com/support/.

Refer to the LDD Today article titled, *Notes from Support: Calling Support with a Domino server crash* available on the Lotus Developer Domain Web site at http://www-10.lotus.com/ldd.

References for Lesson 8: Resolving User Problems

Resolving workspace and database problems

Use the following additional resources:

- For specific details on other issues, refer to Lotus Domino Administrator 6 Help. Begin by reviewing the following topics:
    - *Database performance -- Troubleshooting*
    - *Managing databases with the Files tab*
    - *Monitoring database activity*
    - *Determining the file format of a database*
    - *Database maintenance*

- Additionally, refer to the following in Lotus Notes 6 Help:
    - Troubleshooting topics
    - Documents resulting from searching for keywords: desktop, error, or cache

- Look up any error messages on the Lotus Support Services Web site at http://www-3.ibm.com/software/lotus/support/.

Solving connection problems

Use any of the following additional resources:

- View the Domino Server Log (Log.nsf) for error messages and problems.
- Refer to the following documents in Lotus Domino Administrator 6 Help:
    - *Modems and remote connections -- Troubleshooting*
    - *Network connections over NRPC -- Troubleshooting*
    - *Network dialup connections -- Troubleshooting*

- Look up any error messages on the Lotus Support Services Web Site at http://www-3.ibm.com/software/lotus/support/.
- If recent changes to a server include host name, IP address, or port names, it may be necessary to clear some system fields in the Server document. Refer to the following technotes on the Lotus Support Services Web site:
    - *How to Disable Server Cache of the Last Known Address*
    - *Where are Server Addresses Cached in Notes and Domino?*